



# Minister of Natural Resources

Annual Report  
1980

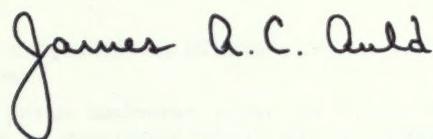


# Annual Report

of the Minister of Natural Resources  
of the Province of Ontario  
for the fiscal year ending March 31, 1980  
\$2.00

TO HIS HONOUR  
The Lieutenant-Governor  
of the Province of Ontario

MAY IT PLEASE YOUR HONOUR  
The undersigned begs respectfully to present to  
your Honour the Annual Report of the Ministry  
of Natural Resources for the fiscal year beginning  
April 1, 1979, and ending March 31, 1980.



JAMES A.C. AULD  
Minister



Ministry of  
Natural  
Resources

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*\*Related information of interest  
is reported in Statistics, 1980.*

# Highlights

- The total value of mineral production in Ontario in 1979 was \$3.27 billion.
- Payments under the Mineral Exploration Assistance Program were \$647,514, bringing the total government expenditure since 1971 to \$3,630,826.
- Grants of \$475,567 to nine universities were approved under the Ontario Geoscience Research Grant Program.
- The Ontario Geological Survey sent out 34 field survey crews as part of the regular on-going program, and another 22 field survey crews on behalf of other agencies, to map and record geological information.
- The first 22 of a projected 137 Northern Ontario Engineering Geology Terrain Study maps are now available for use.
- The first Aggregate Resources Inventory Paper was released during the year. The aggregate inventories are being prepared to cover all townships designated under The Pits and Quarries Control Act.
- Tax revenues collected during the year under The Mining Tax Act amounted to \$98,900,000, an increase of 137 per cent on the year.
- "The Future of Nickel and the Law of the Sea" was issued as Policy Background Paper No. 10 and widely distributed in English and French. It highlights the Ministry's contribution to the United Nations Law of the Sea conference.
- The harvest of wood on Crown land amounted to 1,796,000 m<sup>3</sup> (6,340,000 cunits), valued at \$46.3 million at time of measurement.
- On Crown lands 240,448 ha (594,163 acres) received silvicultural treatment.
- Ontario's forests were planted with 69 million trees raised in Ministry nurseries.
- Agreements with private landowners under The Woodlands Improvement Act increased by 819 to 7,720, bringing 136,428 ha (336,979 acres) under agreement.
- Forests managed by agreements under The Forestry Act (mainly with municipalities and Conservation Authorities) increased by 274 ha (677 acres) to 109,446 ha (270,441 acres).
- In the continuous inventory of Ontario's forests, 45,325 km<sup>2</sup> (17,500 square miles) were photographed from the air. Sampling surveys of forest stands were made by field parties on 25,900 km<sup>2</sup> (10,000 square miles).
- In provincial parks 1,353,733 persons camped a total of 3,259,752 nights in 1979.
- The Ministry managed 24,140 km (15,000 miles) of canoe routes in provincial parks and on other Crown lands.
- Under the winter trails recreation program, \$500,000 was made available in grants to trail clubs and Conservation Authorities for the grooming and maintenance of 14,100 km (8,813 miles) of snowmobile trails and 1,540 km (963 miles) of cross-country ski trails. The Ministry maintained 1,540 km (963 miles) of snowmobile trails and 620 km (388 miles) of cross-country ski trails on Crown land.
- About 1,400 water access points with parking areas and boat ramps were maintained on Crown land.
- Canada geese that breed wild in southern Ontario now number 30,000 birds, the result of the program begun in 1968.
- Ontario's 14,983 trappers sold 929,196 wild fur pelts for \$20.2 million.
- Ontario residents bought 551,515 hunting licences in 1979 and non-residents bought 31,914.
- Certified instructors trained 35,080 new hunters in 1979, bringing to 525,878 the number trained since 1957.
- The public attended 72 open-house meetings across the Province and strongly supported a management plan to increase the size of the moose herd which numbers 80,000 animals.
- A shotgun season for deer, with controlled hunter numbers, was held for the first time in agricultural southern Ontario.
- The Strategic Plan for Ontario Fisheries (SPOF) was begun and more than \$500,000 was expended on the rehabilitation of fish habitat.
- The back-cross strain of hybrid splake provided spectacular fishing in southern Georgian Bay.
- In the inventory begun in 1969, 10,000 lakes and 750 streams have been surveyed in Ontario for an initial estimate of fish production.
- Ontario waters were stocked with six million fish raised in Ministry hatcheries; 13.5 million eggs were also planted.
- The commercial fish harvest declined slightly but its value rose by \$4 million to \$26 million. Lake Erie accounted for 70 per cent of the catch and its value.
- Grants to conservation authorities under The Conservation Authorities Act amounted to \$30,158,072.
- The Ministry maintained 8,919 km (5,542 miles) of resource access roads.
- A total of 2,480 ha (6,130 acres) of private land was acquired for government purposes, bringing the acquisition since 1962 to 257,481 ha (636,250 acres).
- Sixty-six regulations and 437 Orders-in-Council were prepared and processed.

# Goal

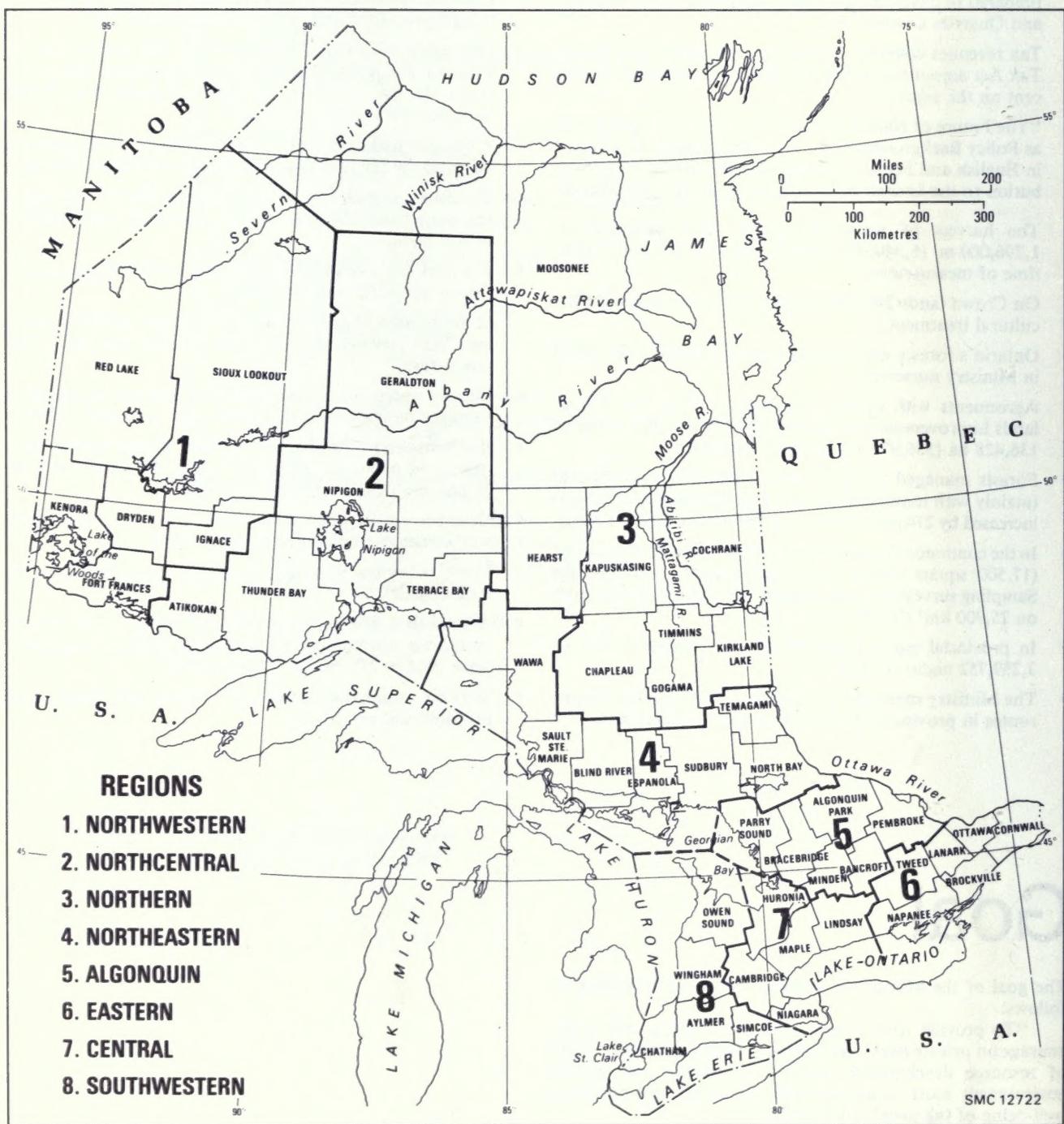
The goal of the Ministry of Natural Resources is defined as follows:

"To provide from Crown lands and waters, and to encourage on private lands and waters, a continuing combination of resource development, outdoor recreation and quality environment most consistent with the social and economic well-being of the people of Ontario."

# Ministry Operational Organization

The Ministry of Natural Resources is organized functionally and geographically so that the authority for operational decision-making is placed as close as possible to the program delivery level.

While the field organization of the Ministry directly provides services to the public, Main Office is responsible for monitoring, co-ordination, policy development, operational review and the comptrollership function.



# Field Organization

The Ministry of Natural Resources is organized functionally and geographically so that the authority for operational decision-making is placed as close as possible to the program delivery level. For administrative purposes, Ontario is divided into eight regions and 48 districts. The district managers, regional directors and field assistant deputy ministers are the line managers responsible for implementing the Land Management, Outdoor Recreation and Resources Products Programs of the Ministry.

Each regional office is organized into functional units headed by specialists responsible for providing advice and support to the districts. In some instances — such as conservation authorities, mineral management, engineering and administrative services — the regional office is also the delivery point for Ministry programs.

The primary role of the regional director and his staff is to direct and co-ordinate the work of the districts by establishing regional priorities and allocating appropriate resources to meet these; by establishing program standards and subsequently auditing to ensure the standards are met; by developing training programs and ensuring they are implemented; and by providing specialized advice and support services. In addition, the Regional Director and his staff recommend to main office annual work plans and identify areas where policy is required or needs to be modified.

Districts are the basic line units of the Ministry organization where the management and use of natural resources takes place with consideration of local requirements. District managers are responsible for the preparation of local land use plans and for the integration of individual resource plans that are consistent with the land use plan. Each district manager is responsible to the appropriate regional director for all activities assigned to the district.

The four northern regional directors and the Aviation and Fire Management Centre director report to a field assistant deputy minister at Thunder Bay; the four southern to one located at Toronto. The two field assistant deputy ministers are assigned line responsibility, authority and accountability for program management. In addition, they reflect field positions through membership on the Policy and Priority Committee.

# Policy Co-ordination Secretariat

## The Policy Co-ordination Secretariat:

- Provides co-ordination, integration and communication services with regard to policy planning to the main office groups and to the regions to assist them in achieving the Ministry's objectives;
- Provides staff support to the Policy and Priorities Committee, the Minister's Policy Committee and other senior-level committees as required;
- Supports the production of new policy initiatives in conjunction with the relevant main office and regional staff;
- Provides support, advice and information to the main office groups and regions in assessing long-range policy needs and directions in the context of the Ministry's mandate and government objectives;
- Ensures the widest and earliest possible multi-functional consideration of policy proposals being developed within the Ministry;
- Co-ordinates the process for development of new legislation;
- Ensures the necessary liaison with Cabinet and its committees, and with other Ministries; and
- Undertakes special policy co-ordination assignments at the request of the Chairman of Policy and Priorities Committee.

# Forest Resources Branch

The objective of the Branch is to produce optimum and continuous industrial, social and environmental benefits from the public forests and to encourage and assess similar production on private lands in Ontario.

## Ontario Forest Research Centre

The Ontario Forest Research Centre continued to generate knowledge and develop techniques and materials in the biological and ecological fields for use in effective forest management. This is undertaken by the Centre's own scientists, through contracts with universities and the private sector, and through co-operative programs with the Canadian Forestry Service and various institutes.

Active participation by field managers is sought to assist in the identification and description of problems and subjects which may require research effort. Suitable arrangements for such research-management co-operation are being developed.

Studies contributing to the successful establishment, through planting, of conifer species on cutover or other lands are a major concern. These range from the improvement of seed supplies, through effects of nursery practices on the physical and physiological quality of stock, to the understanding and evaluation of growth and survival after outplanting. The research phases of using pregerminated black spruce seed raised in peat cubes in greenhouse conditions have been completed and pilot-scale production studies have been initiated.

Increasingly, genetically improved material is being used for planting stock. The development of new hybrids and testing of previous hybrids in both conifer and hardwood material continues. In particular, the development of poplar hybrids suitable for northern Ontario is being tackled. Emphasis is also being placed on documenting the genetic variation in native poplar species and establishing gene-pool collections.

Irregularity in production of pollen and seed cones has impeded the spruce breeding programs and lengthened the time interval of the advanced generation breeding. Research has therefore been initiated into promoting regular and ample cone production in spruce seed orchards, and to increase the amount of viable seeds in the cones.

Analysis of the structure and development of balsam fir stands in the natural spruce-fir-aspen forest in northern Ontario is a new program to obtain information that can be used to develop suitable management techniques for this "problem" species. Similar stand dynamics studies in the tolerant hardwood forest of the southern part of the province have led to improvements in the quality of sugar maple and in establishment of yellow birch. This has been accomplished through ongoing research-management interchange of information.

The productivity of forest sites continues to be of concern as utilization of species and the extent and intensity of management practices change. Thus productivity and nutrient cycling in spruce ecosystems has been a subject of long-term study, as has the recording of growth response to management treatments on permanent sample plots in hardwood stands and conifer plantations. Possible nutrient loss under short rotation systems in poplar management is the focus of new studies. Next year, preliminary work will be undertaken on facets of acid precipitation in relation to growth effects.

Growing of trees for the traditional lumber and pulp markets is not the only aspect being considered. For example, the potential of poplar as a source of fuel, and of proteins for human and animal food, is being investigated through contract studies.

These and other studies are outlined briefly in Forest Research 79, an annual review of many of the activities of the Ontario Forest Research Centre.

## Silviculture

### Tree Seed Program

In January, 1979, a second tree seed plant started operation at the Wabigoon nursery near Dryden to extract seed from jack pine cones for the Northwestern Region. A total of 6,633 hl of cones were extracted in the 1979-80 fiscal year. This second plant complements the Ontario Tree Seed Plant at Angus.

The Angus plant extracted a total of 18,434 hl of cones for all species, including 15,095 hl of jack pine, during the fiscal year.

As of June 1, 1979, the inventory of forest tree seed in storage at Angus was 5,705,000,000 viable seeds of 79 species, weighing 34,700 kg and valued at \$2,896,000.

### Seed Collection

The year 1979 was a good crop year for many of the species used in the reforestation program.

1979 Seed Crop by Species	Hectolitres Collected
Jack pine.....	15,023
White pine .....	1,400
Red pine .....	180
Black spruce .....	1,240
White spruce .....	134
Black walnut .....	1,060
Basswood .....	82
Other species .....	370
	Total 19,489
	(53,595 bushels)

### Seed Distribution

A total of 1,593,215,000 viable seeds was used to carry out the regeneration projects in the Province during 1979. The seed was used in four main programs.

Direct Seeding .....	1,164,407,000
Nursery stock production .....	397,515,000
Container stock production .....	24,531,000
Research and Miscellaneous .....	6,763,000
	Total viable seed 1,593,216,000

### Planting Stock Distribution

Bare Root Nursery Stock	
Conifers .....	57,635,506
Hardwoods .....	3,817,955
Total .....	61,453,461
Container Stock .....	7,944,817
Grand Total .....	69,398,278
Production Targets seeded .....	73,630,000

### Tree Improvement

In the past year, activity in tree improvement has accelerated throughout the Province. To date, detailed implementation schedules have been prepared for black spruce, jack and white pine outlining the requirements necessary to produce sufficient quantities of improved seed to meet the Forest Production Policy targets.

A third grafting centre was started in the Northwestern Region and it is anticipated that additional centres will be set up throughout the Province to increase grafting productivity — thus reducing the time required to establish the clonal orchards.

The first progeny trials, using controlled pollinated seed from the Northern Region clonal orchards, were established in both black and white spruce. Much of this material is being

## Classification of Cutover Forest Land, 1979-1980

Areas in Hectares (Acres)

Cutting Method	Available For Regeneration Treatment			Natural Regeneration Without Treatment			Not Available For Regeneration Treatment			Total		
	Crown	Patent	Total	Crown	Patent	Total	Crown	Patent	Total	Crown	Patent	Total
Clear out	75,694 (187,044)	5,687 (14,053)	81,381 (201,097)	33,201 (82,041)	13,827 (34,167)	47,028 (116,208)	30,698 (75,856)	1,040 (2,569)	31,738 (78,425)	139,593 (344,941)	20,554 (50,789)	160,147 (395,730)
Selection Cut	—	—	—	11,120 (27,479)	10,817 (26,729)	21,937 (54,208)	—	—	—	11,120 (27,479)	10,817 (26,729)	21,937 (54,208)
Partial Cut	—	—	—	—	—	—	25,757 (63,648)	10,737 (26,531)	36,494 (90,179)	25,757 (63,648)	10,737 (26,531)	36,494 (90,179)
<b>TOTAL</b>	<b>75,694 (187,044)</b>	<b>5,687 (14,053)</b>	<b>81,381 (201,097)</b>	<b>44,321 (109,520)</b>	<b>24,644 (60,896)</b>	<b>68,965 (170,416)</b>	<b>56,455 (139,504)</b>	<b>11,777 (29,100)</b>	<b>68,232 (168,604)</b>	<b>176,470 (436,068)</b>	<b>42,108 (104,049)</b>	<b>218,578 (540,117)</b>

## Summary of Silvicultural Operations, 1979-80

Areas in Hectares (Acres)

	Crown Land	Agreement Forests	W.I.A.	Sub-Total	Other Patent Lands	Total
<b>REGENERATION</b>						
Planting Nursery Stock	19,830 (48,998)	445 (1,100)	4,414 (10,909)	24,689 (61,007)	2,004 (4,953)	26,693 (65,960)
Planting Container Stock	3,860 (9,539)	200 (495)	77 (190)	4,137 (10,224)	— (—)	4,137 (10,224)
Seeding	24,251 (59,926)	— (—)	— (—)	24,251 (59,926)	— (—)	24,251 (59,926)
Scarification	2,392 (5,911)	4 (9)	— (—)	2,396 (5,920)	— (—)	2,396 (5,920)
Strip Cutting	2,058 (5,086)	— (—)	— (—)	2,058 (5,086)	— (—)	2,058 (5,086)
Seed Tree Cutting	7,339 (18,135)	7 (17)	— (—)	7,346 (18,152)	— (—)	7,346 (18,152)
Shelterwood Cutting	9,867 (24,383)	18 (44)	280 (691)	10,165 (25,118)	239 (591)	10,404 (25,709)
Clear Cutting	2,266 (5,598)	107 (266)	8 (20)	2,381 (5,884)	243 (600)	2,624 (6,484)
<b>Total</b>	<b>71,863 (177,576)</b>	<b>781 (1,931)</b>	<b>4,779 (11,810)</b>	<b>77,423 (191,317)</b>	<b>2,486 (6,144)</b>	<b>79,909 (197,461)</b>
<b>RE-TREATMENT</b>						
	2,072 (5,120)	38 (93)	1,721 (4,254)	3,831 (9,467)	— (—)	3,831 (9,467)
<b>TENDING</b>						
Hand Cleaning	5,326 (13,161)	598 (1,477)	704 (1,740)	6,628 (16,378)	38 (93)	6,666 (16,471)
Herbicide Spraying	13,156 (32,509)	378 (935)	1,402 (3,464)	14,936 (36,908)	2,012 (4,973)	16,948 (41,881)
Thinning Improvement Cuts	8,511 (21,032)	1,864 (4,605)	2,856 (7,058)	13,231 (32,695)	386 (953)	13,617 (33,648)
Pruning	695 (1,717)	583 (1,441)	353 (872)	1,631 (4,030)	1 (3)	1,632 (4,033)
Fertilization Drainage	172 (424)	144 (357)	50 (124)	366 (905)	— (—)	366 (905)
<b>Total</b>	<b>27,860 (68,843)</b>	<b>3,567 (8,815)</b>	<b>5,365 (13,258)</b>	<b>36,792 (90,916)</b>	<b>2,437 (6,022)</b>	<b>39,229 (96,938)</b>
<b>SITE PREPARATION</b>						
	49,061 (121,233)	555 (1,372)	1,370 (3,384)	50,986 (125,989)	8 (20)	50,994 (126,009)
<b>MARKING</b>						
	50,607 (125,052)	4,024 (9,944)	4,525 (11,182)	59,156 (146,178)	7,329 (18,110)	66,485 (164,288)
<b>TOTAL AREA TREATED</b>						
	201,463 (497,824)	8,965 (22,155)	17,760 (43,888)	228,188 (563,867)	12,260 (30,296)	240,448 (594,163)

reproduced en masse through a unique vegetative propagation program by rooting cuttings taken from the juvenile seedlings.

More than 3,000 black spruce trees were selected in the Northwestern Region. Cones were collected and the seed was

germinated for subsequent establishment of seedling seed orchards and progeny trials. A similar program for jack pine is under way in the Northeastern Region. Improvement programs are also under way for several hardwood species.

<b>Tree Seed Areas</b>	<b>Black spruce</b>	<b>White spruce</b>	<b>White pine</b>	<b>Jack pine</b>	<b>Other species</b>	<b>TOTAL</b>
Seed collection area in hectares (acres)	1,060 (2,620)	279 (690)	101 (250)	8,192 (20,235)	577 (1,427)	10,209 (25,222)
Seed production area in hectares (acres)	77 (191)	178 (440)	14 (33)	959 (2,368)	102 (252)	1,330 (3,284)
Seed orchard area in hectares (acres)	15 (37)	19 (44)	12 (29)	—	20 (49)	66 (159)

## Advisory Services

### Private Lands

<b>The Woodlands Improvement Act</b>	<b>Number of Agreements</b>	<b>Areas in Hectares (Acres)</b>
New Agreements Activated 1979-80	819	9,940 (24,224)
Agreements in Effect to March 31, 1980	7,720	136,428 (336,979)
Number of Trees Planted	9,287,870	

Planting and woodland improvement operations are carried out on these private lands through agreements made under The Woodlands Improvement Act. The acreage treated is an integral part of forest production targets, and is of particular importance in Southern Ontario, where there is no significant area of Crown land.

### Agreement Forests

<b>Agreement Holders</b>	<b>Areas in Hectares (acres)</b>		
	<b>Added 1979-80</b>	<b>Released 1978-80</b>	<b>Total</b>
1 Government of Canada			1,430 (3,532)
23 Conservation Authorities	162 (400)	569 (1,405)	37,908 (93,671)
19 Counties	348 (861)	9 (23)	59,222 (146,338)
10 Townships			1,226 (3,029)
6 Regional Municipalities	219 (540)		8,889 (21,965)
1 Company	123 (304)		771 (1,906)
<b>60 Totals:</b>	<b>852 (2,105)</b>	<b>578 (1,428)</b>	<b>109,446 (270,441)</b>

The agencies reported above have entered into forest management agreements with the Minister under The Forestry Act. The agencies' forests are an integral part of forest production targets, and are of particular importance in districts with no significant areas of Crown land.

## Pest Control

The current outbreak of spruce budworm, which started in 1967, continued to expand and intensify. The outbreak now covers a gross forested area of 18 million hectares (45 million acres), an increase of three million hectares from 1978. The affected area includes almost all the Northern Region, as well as parts of the Northwestern, Northeastern, North Central and Algonquin Regions.

The Ministry conducted spraying programs to protect 8800 ha of mature forest in Geraldton District and 8000 ha in Kirkland Lake District. As well, high-value forests, mainly seed production areas, were sprayed in Chapleau, Gogama, Cochrane, Kapuskasing and Hearst Districts. In total, 20,013 ha were sprayed, using two chemical insecticides (Matacil and Orthene) and two bacterial insecticides (Thuricide and Novabac).

In 1979, the Ministry introduced a Spruce Budworm Spraying Policy which defines the criteria to be used for selective protection spraying of forests infested with spruce budworm, as well as restrictions on spraying to ensure that only small-scale programs will be conducted. As well, an information program on aerial spraying was conducted throughout northern Ontario to inform the public about the necessity for, and operational controls on, aerial spraying.

An additional 310 ha in Huronia District was treated with Orthene to protect oak forests from serious defoliation by the oak leaf shredder.

The maple decline problem in Parry Sound and Owen Sound Districts stabilized in 1979, with no new major areas of mortality appearing. Generally the condition of affected stands improved and it is expected that this will continue, especially since the serious forest tent caterpillar outbreak, associated with the decline, has subsided. Harvesting programs are under way to utilize the dead and dying trees for sawlogs, boltwood and firewood.

Intensive surveys by the Canadian Forestry Service and Ministry staff established that the European strain of Scleroderris canker is not yet present in Ontario. This disease has caused severe localized mortality of red pine plantations in Quebec and New York State. Co-operative federal-provincial programs are under way to prevent accidental introduction of the fungus into Ontario.

Other minor pest problems, eg. white pine weevil, pine and spruce sawflies, Fomes root disease, and rodents, required localized control throughout southern Ontario. In total, 22,441 ha (56,104 acres) were treated for insect, disease and rodent problems.

# Timber Sales Branch

The major responsibilities of Timber Sales Branch are the rational management of Ontario's Crown land forests and the orderly disposition of the Province's Crown timber resource.

Authority under the statute and the regulations of The Crown Timber Act allows the Branch to effect these responsibilities. They are accomplished through the continuous inventory of the forest resource, the review and approval of all Crown, company, and Agreement forest management plans, the allocation of the Province's Crown timber resource to the forest industry by various statutory methods, the licensing of all forest industry or timber-using mills, the measurement or scaling of the harvested volume of Crown timber, and the continual monitoring of various factors affecting the performance of Ontario's forest industry.

## Forest Resources Inventory

The Forest Resources Inventory Section supervised the tendering, quality checking, and indexing of 45,325 km<sup>2</sup> (17,500 square miles) of aerial photography for the Northern Region. All of this photography was carried out at the conventional scale of 1:15,840.

In addition to the aerial photography, sampling surveys of forest stands were conducted by field parties on almost 25,900 km<sup>2</sup> (10,000 square miles) in the Ministry's five districts of the Central Region. Aerial photograph interpretation, along with the identification of forest stand types in this region, were completed and checked.

Further, more than 20,720 km<sup>2</sup> (8,000 square miles) were covered by checking of interpretation work performed by contract outside the Ministry. These areas were under Crown timber licence to Great Lakes Paper Co. Ltd., Kimberly-Clark of Canada Ltd., Reed Ltd. and Kesagami Management Unit.

The forest stand inventory data are compiled for computer tabulation. More than 39,160 km<sup>2</sup> (15,119 square miles) of new forest inventory data were stored and report ledgers were produced. As well, the inventories of several Crown forest management units in Northeastern, Northern, North Central and Algonquin Regions were updated.

The photographic darkrooms associated with the aerial photograph work continued to serve the Ministry's main office and field offices as well as the public in general.

## Management Plans

Forest management plans provide the broad framework within which forest operations are conducted. More detailed operating plans for shorter time periods identify the Crown timber stands to be harvested, regenerated and tended, and the

### Status of Management Plans March 31, 1980

Areas in Square Kilometers (Square Miles)	Forest Management Units					
	Crown No.	Area	Company No.	Area	Agreement No.	Area
Approved Standard Plans	65	187,331 (72,329)	3	38,679 (14,877)	38	767 (296)
Plans Submitted For Approval	—	—	2	18,387 (7,099)	2	122 (47)
Plans Being Prepared and/or Revised	14	67,461 (26,047)	12	141,685 (54,705)	20	201 (78)
New Inventory Required	3	29,427 (11,362)	—	—	—	—
Inactive and/or Inaccessible Not Under Plans	6	50,199 (19,382)	—	—	—	—
Total	88	334,418 (129,120)	17	198,751 (76,681)	60	1,090 (421)

roads and other improvements required in Crown, Company, and Agreement Forest management units. During the 1979-80 fiscal year, 259,000 ha (640,000 acres) of operational cruise data were processed by computer as supplied by the Ministry's forestry field staff.

## Timber Allocation

The Crown timber resource is allocated to the Province's forest industry in accordance with forest management principles and industrial requirements. Crown timber harvesting licences provide the Province's forest industry with the legislative authority to harvest Crown timber on an annual, allowable-harvest basis. The licences take several forms and are specific as to geographic area, tree species, volumes, stumpage payments and other charges, and various harvest control measures.

As of March 31, 1980, there were 510 active timber licences in the Province covering an area of 242,874 km<sup>2</sup> (93,774 square miles). During the course of the fiscal year, 167 new or renewed Order-in-Council timber licences were drafted, processed and issued, and an additional five tendered bid sales were conducted in conjunction with the respective field office.

## Wood Measurement

Measurement, or scaling, determines the volume of timber harvested from Crown lands and Agreement Forests. It is the basis for the determination of public revenue and forest production statistics related to the forest industry.

Only licensed scalers, approved by the Ministry, may be employed to measure Crown timber for Ministry purposes. These scalers are required to attend standardized scaling refresher courses on a regular basis so that they are kept fully versed in the latest measuring techniques and to ensure that high, uniform scaling standards are maintained.

Wood measurement practices in Ontario are under constant review, and new methods are continually explored to ensure that scaling methods keep abreast of the latest harvesting techniques. Scaling in metric units is scheduled to be introduced April 1, 1981. At that time wood volumes will be measured and reported in cubic metres, stacked cubic metres or units of 100 kilograms.

During 1979-80, 6.34 million cunits (1.796 million m<sup>3</sup>) were measured as being harvested from Crown land in Ontario. This timber was valued at \$46.3 million at the time of measurement.

## Forest Industry Development

Forest Industry Development Section is concerned with the growth and development of the various components of the Province's forest industry. It monitors the demand for, and the supply of, timber products and the pattern of trade in these commodities, and it analyzes resource taxation and pricing. The Section assists in industrial expansion and regional development through industrial liaison, policy development and economic analyses.

Forest industry mills are licensed to operate with respect to Crown and private timber supplies in a specific locality. During 1979-80, 836 mills were licensed to process timber in the Province. They produced 3.99 million m<sup>3</sup> (1.69 billion feet board measure) of lumber in response to the steady demand in the housing and remodeling industries. Pulp and paper product markets remained buoyant during 1979.

Progress was made during 1979 in the implementation of the forest management subsidiary agreement to the Canada-Ontario General Development Agreement with the Government of Canada, Department of Regional Economic Expansion. This agreement covers \$71.5 million worth of projects over five years to be cost-shared and to include forest access roads, silviculture camps, tree nursery expansions, soil surveys, and research and development work.

An active role is also being maintained in the Province's program of modernization and improvement of the pulp and paper industry through advice to the Ministry of Industry and Tourism.

# Ontario Geological Survey

The Ontario Geological Survey provides information on the geology and mineral resources of Ontario to encourage industrial exploration, provide a basis for land-use planning, and aid in the development of non-renewable resource policies.

Geological, geophysical and geochemical surveys identify favorable locations for mineral and aggregate deposits and provide increased knowledge and understanding of the geological history of Ontario. Data on mineral deposits are compiled, and areas having significant potential identified. Educational programs and published reports and maps are made available to the public. Additional scientific contributions are made by presenting papers and leading field trips at geoscience conventions.

The Ontario Geological Survey administers the Mineral Exploration Assistance Program (MEAP) whereby the Government reimburses an individual or company one-third of the cost of an approved exploration expenditure (maximum \$100,000) in any of six designated areas.

Members of the Ontario Geological Survey attended several conferences to present papers or poster sessions, chair sessions or present a display of O.G.S. services. These included the annual meeting of the Geological Association of Canada/Mineralogical Association of Canada at Quebec City and nine other conferences.

The second Geoscience Research Seminar was held in Toronto, December 5-7, 1979, to hear the findings of 22 provincially-funded university research projects carried on during the 1978-79 fiscal year. Grants totalling \$475,567 were approved for the nine universities participating under the Ontario Geoscience Research Grant Program.

## Precambrian Geology

In 1979 a total of 26 field crews conducted Precambrian bedrock geological surveys distributed throughout the Province from Red Lake to Sharbot Lake. Surveyed areas ranged from 185 km<sup>2</sup> to 900 km<sup>2</sup> (70 to 350 square miles), depending upon the detail and scale of the survey, and in total 27 projects were undertaken. Of these, 19 projects, comprising the ongoing Survey projects, covered about 3100 km<sup>2</sup> (1,200 square miles) at a detailed scale (1:12,000 to 1:31,680) and about 1800 km<sup>2</sup> at reconnaissance scale (1:50,000 to 1:126,720).

Of the remainder, seven projects (NOGS) supported by the Ministry of Northern Affairs and one project (KLIP), funded jointly by the Ministry of Northern Affairs and the Canada Department of Regional and Economic expansion, covered an additional 1280 km<sup>2</sup> (450 square miles) in detail.

The objectives of these surveys are to produce interpretive maps of Precambrian bedrock geology, identify geological environments favorable to the occurrence of mineral deposits, identify bedrock features which influence mineral concentration and land-use and encourage and guide exploration and resource planning.

Base program surveys concentrated on five major geological belts across the Province and on special studies of volcanic and plutonic processes influencing mineralization. The projects undertaken in 1979-80 represent components of a long-term base program in five high mineral potential geological belts.

These projects included surveys in: (1) The Red Lake, Birch Lake and Ferdinand Lake areas of the Uchi Belt; (2) The Kenora, Dyment, Atikokan, Armstrong and Nakina areas of the Wabigoon belt; (3) The Schreiber, Wawa, Batchewana and Swayze areas, and studies of the Kirkland Lake-Timmins regional stratigraphy and mineral deposits, all in the Abitibi-Wawa belt; (4) The Lake Wanapitei and Cobalt areas in the Southern Province; and (5) The Wilberforce and Sharbot Lakes areas of the southern Grenville Province.

In addition regional studies of alkalic complexes

throughout the Province, and of characteristics of felsic volcanic rocks and felsic plutonic rocks associated with mineral deposits, were carried out.

Seven special projects were supported by the Ministry of Northern Affairs as components of the NOGS program. These were located in the Sioux Lookout, Longlac, Chapleau, Abitibi, Cobalt and Sudbury areas. One project, jointly funded by the Ministry of Northern Affairs and the Canada Department of Regional and Economic Expansion, was focussed upon the Kirkland Lake area as a component of the Kirkland Lake Initiatives Program.

In addition to field operations, a geological compilation map (1:253,490) of the Red Lake-Birch Lake area was completed and one of the Tashota-Geraldton area was in preparation. Scientific papers, talks, field trips and consultation services were provided for industry, scientific, and Ministry groups.

## Engineering and Terrain Geology

The Engineering and Terrain Geology Section is responsible for the survey and analysis of all geological materials younger than the Precambrian. These include the sedimentary rocks of Paleozoic and Mesozoic age of the James Bay Lowlands and southern Ontario, together with the great variety of glacial deposits of Quaternary age which cover the entire Province.

Major thrusts in these responsibilities are the stratigraphic mapping of the rocks of these ages and the preparation of an inventory of mineral aggregates throughout the Province. An important role is to provide information to, and liaise with, municipalities for aggregate resource planning.

Nine Quaternary Geology field parties were active during 1979. Several areas in southwestern, southcentral and eastern Ontario, in addition to localities near Kirkland Lake, Timmins, Hearst and Atikokan, were investigated to provide maps of surficial materials and sand and gravel deposits. A drilling program to investigate the subsurface rocks in the Windsor area was completed, and a study of the Paleozoic limestone and dolostone resources of Manitoulin Island, funded by the Ministry of Northern Affairs, was continued for a second year.

Work continued in 1979 on the preparation of aggregate resource inventories for all townships in southern Ontario designated under The Pits and Quarries Control Act (1971). The engineering terrain evaluation of approximately 370 000 km<sup>2</sup> (143 000 mi<sup>2</sup>) of northern Ontario, that was begun in 1977 with funding provided by the Ministry of Northern Affairs, was concluded in 1979. Many maps and reports from the early phases of this project have now been published. An additional area of 30 000 km<sup>2</sup> (11 500 mi<sup>2</sup>) in the Algonquin region of southern Ontario was investigated in a similar fashion during 1979.

The Section continued to supply technical support to a study of the physiography and surficial geology of northwestern Ontario by the Ontario Centre for Remote Sensing.

## Geophysics/Geochemistry

Staff scientists of the Geophysics/Geochemistry Section continued their three-year gravity survey of northeastern Ontario. During 1979, 6100 km<sup>2</sup> (2355 mi<sup>2</sup>) were surveyed in the area of Gowganda, Shining Tree and Gogama.

Results of two special projects funded by the Ministry of Northern Affairs were released in June, 1979. First, an aeromagnetic survey of the Marshall-O'Sullivan Lakes area, covering 2350 km<sup>2</sup> (135 mi<sup>2</sup>), was released to provide information about the stratigraphy and structure of Precambrian rocks obscured due to scarcity of outcrops. Second, the results of an airborne multifrequency electromagnetic survey, to map

the electrical conductivity of earth materials as an aid to lignite exploration in the Cretaceous Basin south of James Bay, were released.

During the year the results of two Federal-Provincial airborne gamma-ray spectrometer surveys were released — in northwestern Ontario a 90 000 km<sup>2</sup> (34 740 mi<sup>2</sup>) area between Lake Nipigon and the Severn River, and in northeastern Ontario a 75 000 km<sup>2</sup> (28 950 mi<sup>2</sup>) area between 84°W longitude and the Quebec border southward from Cochrane. These programs provide data base information for uranium mineral exploration and for the geological assessment of Ontario's uranium potential.

Another type of Federal-Provincial survey, a regional lake sediment geochemical survey covering 34 000 km<sup>2</sup> (13 100 mi<sup>2</sup>) between Sault Ste. Marie and Manitouwadge, was released in May, 1979.

Geochemical staff of the Section supervised an airborne geochemistry test program in two forest covered areas of the Canadian Shield as part of the Northern Ontario Geological Survey (NOGS), and continued the geochemical basal till survey as part of the Kirkland Lake Incentives Program.

## Mineral Deposits

The Mineral Deposits Section studies deposits of both metallic and nonmetallic minerals and their distribution, geology, reserves and potential. An important role is to provide reserve data and resource potential estimates for use in government planning, particularly for land-use, parks and transportation corridors, and as background for studies by the Mineral Resources Branch.

The Section began a five-year, ten component industrial minerals program for the Ministry of Northern Affairs in northern Ontario, a detailed study of uranium mineralization near Bancroft, and a special study of Ontario's uranium data base relative to Canada and the world. Uranium deposits in Saskatchewan, the United States and Australia have been visited.

On-going studies included base-metal associations within the Grenville Province, a nickel inventory of the Sudbury area, gold deposits in the Atikokan area, Early Precambrian "porphyry type" deposits, and geological and geochemical guidelines to gold exploration in the Timmins area.

On a routine basis, many producing mines and exploration sites were visited.

## Mineral Exploration Assistance

Government payments under the Mineral Exploration Assistance Program (MEAP) for the fiscal year were \$647,514, bringing the total government expenditure since 1971 to \$3,630,836. The six designated areas are Eastern Ontario, Red Lake, Atikokan, Geraldton-Beardmore, Kirkland Lake, and Cobalt-Gowganda. Open File Reports 5114, 5147, 5209, 5230, 5251, 5272 and 5304 cover MEAP to March 31, 1980.

## Regional Geologists

Regional and Resident Geologists' Offices were maintained in the following centres: Kenora, Red Lake, Sioux Lookout, Thunder Bay, Sault Ste. Marie, Sudbury, Timmins, Kirkland Lake, Huntsville, Kemptonville, Richmond Hill and London. During the year a new office was established at Tweed. Regional and Resident Geologists provide a consultative service to government, industry and the public on the geology and mineral deposits of the province.

During the year, visits were conducted on a regular basis to operating mines and prospects, and geoscience data for numerous land-planning functions were provided. A variety of field mapping projects and specific studies were also undertaken.

A library of published and unpublished geoscience information is maintained in each Office, including reports of the Mineral Resources Group, reports of other government agencies, and records of exploration activities submitted for assessment work credit.

## Special Programs

### Pembroke-Renfrew Initiatives (PRIP)

The Pembroke-Renfrew Initiatives Program (PRIP) is financed jointly by the Canada Department of Regional and Economic Expansion and the Ontario Ministry of Treasury and Economics. The field studies began in 1976 and were completed in 1978. In 1979 there was steady progress in processing and interpreting the data and in publishing the results.

Six Preliminary Maps, one Miscellaneous Paper, and two Open File Reports were released during the year. These publications dealt with base metals, precious metals, iron and molybdenum deposits, marbles, and industrial minerals of the Pembroke-Renfrew area. Four preliminary geological maps were released covering northern and western Renfrew County and the Khartum area.

As a result of this work exploration has been undertaken in the detailed survey areas, and the regional survey has for the first time provided a comprehensive scientific base upon which mineralization concepts can be developed to guide exploration and resource management.

### Northern Affairs Development (NAGS)

In the summer of 1977, the Ontario Geological Survey commenced a three-year Northern Affairs Development Program (NAGS) funded by the Ministry of Northern Affairs. The program had three objectives — to stimulate exploration for fossil fuels in Ontario, to stimulate mineral exploration throughout northern Ontario, and to improve the land capability and aggregate potential data base to assist northern community and regional planning.

A helicopter-supported geological survey of the Burnt-bush-Detour Lake area north of Lake Abitibi, covering 4,000 km<sup>2</sup> (1,500 square miles), was completed by the Precambrian Geology Section in 1978-79. Preliminary maps and an open file report were released to the public in 1979 and a final report and map were in process of publication in 1979-80. This survey encompasses the major new Amoco gold deposit at Detour Lake and provides a basis for exploration access and land-use planning in this rapidly developing area.

Many maps and reports from the early phases of the collection of surficial geology data in northern Ontario, to assist land-use planning and the search for sand and gravel supplies, have now been published and all the remaining ones will become available in 1980.

The survey results of an aeromagnetic survey covering 2350 km<sup>2</sup> (135 mi<sup>2</sup>) in the Marshall-O'Sullivan Lakes area were released in June, 1979. These 20 maps at a scale of 1:15 840 show the residual total magnetic field intensity at 10 gamma intervals superimposed on a photo-mosaic base.

A multi-frequency airborne electromagnetic survey over the Cretaceous Basin in the James Bay Lowlands was completed during 1978. Data were obtained, allowing the mapping of the electrical properties of the subsurface unconsolidated material and related lignite deposits. The contours of apparent depth to the upper surface of the more conductive horizon as well as its apparent conductivity were released June, 1979, on photomosaic base maps at a scale of 1:50 000. The maps are accompanied by

computer-plotted profiles and a description of the interpretation technique employed.

## Northern Ontario Geological Survey (NOGS)

Commencing in 1978, The Ontario Geological Survey, with funding provided by the Ministry of Northern Affairs, began a six-year program (NOGS) designed to stimulate further mineral exploration and development in northern Ontario.

In 1979, detailed mapping by the Precambrian Geology Section was performed at a scale of 1:15 840 in the Lateral Lake, Firstbrook Lake, Klob Lake and Capreol areas in addition to mapping of the Shawmere anorthosite rock mass. There were also special studies of the footwall and country rock structures of the Sudbury Irruptive and of the alteration features related to mineralization within volcanic rocks of the Larder Lake-Matheson area.

The Quaternary Geology Subsection mapped the Nassau Lake and Timmins areas at a scale of 1:50 000 to provide an inventory of the surficial geology deposits, determine potential aggregate resources, and describe the geological history of the glacial deposits.

During 1979, 1744 localities were examined and six drill holes completed to assess the limestone and dolostone resources for the southeastern portion of Manitoulin Island. As a direct result of the as yet uncompleted Manitoulin Island Resource Study, one quarry of 6000 tons/day capacity is opening at the western end of the island and another quarry is currently under predevelopment investigation.

Experimental airborne geochemical surveys were conducted in the Marshall Lake area (255 line km; 158 line mi). The SURTRACE technique developed by Barringer Research Limited, where samples are collected by vacuuming loose particulate material from the leaves and bark of trees onto adhesive tape, was utilized.

In 1979, the study of chromite deposits was concentrated on the type and distribution of ultramafic-mafic suite rocks to distinguish different environments of chromite occurrence. A two-year examination of the uranium deposits of the Southern Province northwest of Lake Wanapitei and of the southern portion of the Cobalt Embayment began in 1979.

A study was also undertaken on the nature, geological association and distribution of base-metal occurrences in the Cobalt area to gain a better understanding of the processes involved in the formation of mineral deposits there. This study is an integral part of a broader metallogenetic program in the eastern part of the Southern Province.

## Kirkland Lake Initiatives (KLIP)

The Kirkland Lake Initiatives Program (KLIP) is funded equally by the Canada Department of Regional and Economic Expansion and the Ontario Ministry of Northern Affairs. All technical aspects of the program, from the initial formulation to the final publication of results, have been entrusted to the Ontario Geological Survey.

In 1979 Precambrian stratigraphic mapping in the eastern part of the area was completed. This study was aimed at delineating accurately the two stratigraphic horizons that contain gold mineralization. Results of the study have allowed projection of the mineralized strata at depth, westward from the Kerr Addison Mine.

An airborne electromagnetic-magnetic survey over approximately 2455 km<sup>2</sup> (945 mi<sup>2</sup>), covering 28 adjoining townships in the KLIP area, was released in September, 1979, and triggered a staking rush. A geochemical reconnaissance basal till survey also got well under way. It is proving the effectiveness of employing dual-tube, reverse-circulation rotary drills for deep overburden drilling and the use of man-portable percussion drills for shallow overburden drilling to obtain samples from basal till sheets.

Quaternary mapping was completed for the Kirkland Lake and Ramore map sheets at a scale of 1:50 000 to determine the extent, characteristics and local variation of the glacial deposits. Such information is of use in assessing aggregate resources in engineering and geochemical exploration studies and in land-use planning.

## Geoservices

The Geoservices Section provides a support and service function to Ministry geoscientists, management and public.

### Geoscience Information Office

This Office organizes and conducts classes of instruction in geology and mineral exploration, answers geological inquiries from the public, and prepares or assists in the production of popular brochures and guide books on the geology of Ontario.

During the year, educational activities of the Geoscience Information Office included two basic courses, one field course and several field trips in addition to 13 miscellaneous talks on geology for the general public. During the summer, half-day geological talks were arranged for most of the Junior Ranger camps of the Ministry, and five exhibits were organized for various earth science conferences or meetings.

The following publications were released during the year: an updated "Rocks and Minerals Information", a slightly revised "Geological Highway Map — Southern Ontario", and a "Location of Field Projects" leaflet.

### Geoscience Laboratories

The Geoscience Laboratories provide scientific support for the programs of the Mineral Resources Group. Assistance is also offered to the private sector. Fees are charged for outside work according to a schedule set to avoid competition with private laboratories.

*Analytical Laboratory.* Laboratory scientists conduct research on analytical techniques and develop new or improved methods of analysis. They provide analyses for a wide variety of components in geological materials. These range from the determination of major constituents of rocks and ores to the geochemical analysis of soil, rock, water and vegetation samples for trace elements. The Laboratory is equipped with up-to-date analytical equipment including simultaneous, multi-channel, computer controlled x-ray fluorescence; inductively-coupled plasma optical emission; and atomic absorption spectrometers.

The Laboratory continued to support reference material projects sponsored by CANMET. As a member of the newly formed International Working Group on Geostandards, data were submitted on the three new reference rocks AN-G, BE-N, and MA-N.

Methods development and research continued to be important for meeting program needs. A paper entitled "The Use of the Scanning Channel of a 'Simultaneous' X-Ray Fluorescence Spectrometer in Trace Element Determinations on Rock Samples" was presented at the annual meeting of the Canadian Institute of Chemistry.

The following new methods were developed over the past year: a geochemical method for gold, using graphite-furnace atomic absorption, capable of determining gold down to the 2 ppb level; an automated hydride method for tin with a detection limit of 1 ppm; an automated colorimetric procedure for phosphorous; an x-ray fluorescence method for tantalum; and a solvent-extraction/x-ray fluorescence method for the rare-earth elements.

*Mineral Science Laboratory.* This Laboratory conducts research and develops methods in mineralogy, petrology, and physical testing. It also conducts examinations and projects for geologists of the Ontario Geological Survey and consults

with members of the public and mining companies. The Laboratory is equipped with extensive sample-preparation facilities. Mineralogical studies involve the use of petrographic and x-ray diffraction techniques.

In the past year a clay mineral library was established and procedures developed, using clay standards, to identify clay minerals in complex mixtures. New geotechnical soil-testing equipment was assembled for ASTM tests of compression, compaction, consolidation and shrinkage.

The Laboratory assisted with analytical, mineralogical and physical testing in the following geological projects: Atikokan Gold Study; Manitoulin Island Resource Study; Kirkland Lake Initiative Program (KLIP); radioactive mineral study of southern Cobalt Embayment samples; correlation of Indian artifacts to source areas using mineralogy and trace elements (joint project with Ministry of Culture and Recreation scientists); concentration studies of apatite (a potential fertilizer) from a feldspar-biotite-magnetite-apatite rock using a magnetic separator; a quartz sand mineralogical and quality study; till lithology studies; and various clay mineral studies.

## Geoscience Data Centre

The Centre performs tasks related to the gathering, research, compilation and computer-processing of geoscience data on mineral deposits of Ontario; indexes publications released by the Ontario Geological Survey and reports submitted for assessment work credit; and within its means investigates and improves upon existing data handling systems.

Indexing of OGS publications, assessment work reports, and reports received under the Mineral Exploration Assistance Program continued. The indexed information is stored in the computerized Ontario Index to Geoscience Data which at the end of the year covered more than 12,000 reports and maps.

In addition to retrieving data requested by the government and public users, the capabilities of the Index have, amongst others, been applied to produce Miscellaneous Paper 77, "Index to Published Reports and Maps, Division of Mines, 1891 to 1977" and yearly supplements. These list, for ease of reference, all publications by document number, author name, and geographic entity (NTS system, township, and district).

The Centre participated in the development of a system to store and process chemical analytical data on rock samples collected by Ontario Geological Survey Staff. Computer programs for data manipulation were written, and file building has started.

As part of the Northern Ontario Geological Survey (NOGS) program, funded by the Ministry of Northern Affairs, the Data Centre is involved in a Data Management Project. It includes (a) preparing a general index to publications released since 1965; (b) compiling mineral deposit data on gold; and (c) building a computerized mineral deposit index file. The additional project of increasing the NTS detail referenced in the Ontario Index was completed.

*The Assessment Files Research Office* maintains for public use a library containing all technical surveys filed for assessment credit or filed in accordance with the Mineral Exploration Assistance Program (MEAP).

An important addition to this depository was made by transferring the mineral deposit files, which are being compiled by the Geoscience Data Centre, to the Research Office. Also filed and made available for public examination are company prospectuses and summary reports received from the Ontario Securities Commission.

As a follow-up of an earlier feasibility study on implementing an integrated province-wide indexing, microfilming, and filing system for industry exploration reports, a detailed design study was completed. Implementation of the system is scheduled to begin in 1981.

## Scientific Review Office

This office is responsible for the scientific review, editing and publication of all geoscience reports and preliminary maps. The following were printed during the year:

<i>Base Budget Publications of Ontario Geological Survey</i>	
Reports, Studies .....	9
Open File Reports .....	17
Miscellaneous Papers, Miscellaneous Publications .....	10
Mineral Deposit Circulars .....	2
Guidebook .....	1
Colored Maps (cartography by Lands and Waters) .....	12
Preliminary Maps .....	504

<i>Special Project Publications of Ontario Geological Survey</i>	
Open File Reports .....	6
Miscellaneous Papers, Miscellaneous Publications .....	1
Northern Ontario Engineering & Terrain Geology Studies .....	9
Colored Maps (cartography by Lands and Waters) .....	19
Preliminary Maps .....	157

# Mineral Resources Branch

The prime objective of the Branch is to assure the orderly development and optimum use of provincial mineral resources in line with the Ministry's policy of broadening the base of mineral development and processing in Ontario. The most important function of the Branch is to provide the Minister of Natural Resources with in-depth researched information and mineral policy options, as well as to ensure equitable mining tax assessments. Major areas of responsibility for the Branch are as follows:

- (a) Development and administration of mineral resource policies;
- (b) Analysis of the effectiveness of present public policies in various jurisdictions in respect of mineral resource development;
- (c) In-depth world-wide mineral commodity studies on each mineral element in provincial mineral reserves, with priorities set for nickel, copper, zinc, iron ore, precious metals, uranium and structural materials;
- (d) Administration of The Mining Tax Act, The Pits and Quarries Control Act and certain parts of The Mining Act;
- (e) In-depth analysis of the existing tax systems to develop a more effective mineral taxation policy;
- (f) Economic studies of metal and mineral markets and factors affecting Ontario's mineral output;
- (g) Federal-Provincial liaison on mineral resources problems;
- (h) Determination of an inventory of the Province's mineral resources, commodity by commodity, and commercially viable ore reserves;
- (i) Continuing analysis of the mineral reserves position against present and projected world supply and demand for minerals;
- (j) In-depth studies of mining and exploration company decision-making processes;
- (k) Preparation of plans to stimulate exploration for, and development of, mineral resources in Ontario;
- (l) Studies on economic behaviour of multi-national mineral resources companies;
- (m) Co-ordination of external research studies to evaluate junior and senior mine financing aspects of models;
- (n) Development of computer models to assess the impact of taxation and environmental controls on the Ontario mining industry and of world mineral market forecasts and simulations by commodity; and
- (o) Development of a computer data base to store, retrieve and analyze the Census of Mines, Quarries and Sand Pits; Survey of Mining Operations; and Survey of Exploration Companies.

## Metallic Minerals

The objective of the Metallic Minerals Section is to provide metallic mineral policy options on a commodity or topical basis. This requires the Section:

- (a) To monitor metal market trends as well as technological progress in the mineral sector; and
- (b) To monitor policy developments in other jurisdictions and other policy fields with respect to their anticipated impact on Ontario metal mining and processing. During the year the bulk of analytical studies which developed the tools for a quantitative analysis of such impacts were completed and the last ones initiated.

The discussion paper, entitled "The Ontario Metal Mining Industry: Present and Future", was re-issued. It is still a fact of life that the health of the Ontario mineral sector depends largely on the health of the economies of the industrialized nations such as the United States, the EEC and Japan and, as was demonstrated in Policy Background Paper No. 5, it depends critically upon often intractable domestic policy programs.

On a commodity basis, a study, entitled "Towards a Nickel Policy for the Province of Ontario", was published as Policy Background Paper No. 4.

This is the first compendium on the nickel industry anywhere, and since publication the projections advanced in the study have been largely borne out by events.

A paper on the role of the zinc industry of Ontario in a global perspective was presented at the Plenary Session of the 11th Commonwealth Mining and Metallurgical Congress in Hong Kong in May, 1978. This paper was based upon the previous year's zinc commodity study. Since then a similar paper with updated material was presented at a meeting of the Bathurst, New Brunswick, Chamber of Commerce.

Mineral Policy Background Paper No. 5, "Investment Effects on the Mineral Industry of Tax and Environmental Policy Changes: A simulation Model", was completed and published. This paper quantified the investment impact of past governmental actions in the area of taxation and environmental policy on the Ontario and Canadian mineral industry and provides the tools to quantitatively anticipate further policy changes in these policy fields.

Policy Background Paper No. 6, "Factor Substitution and Biased Technical Change in the Canadian Mining Industry", Policy Background Paper No. 7, "The Platinum Group Metals-Ontario and the World", Policy Background Paper No. 8, "World Mineral Markets: An Econometric and Simulation Analysis", and Policy Background No. 9, "Guide to Legislation Affecting Mining in Ontario", were issued during the summer of 1979.

Policy Background Paper No. 10, "The Future of Nickel and the Law of the Sea", was issued in English and French and widely distributed. It highlights the Branch's ongoing contribution to the United Nations Law of the Sea conference in support of the interests of the Province's mineral sector.

Policy Background Paper No. 11, "Ontario Mining Statistics-A Preliminary Compendium", was also issued early in 1980. Work on the second volume of this compendium is proceeding and expected to be completed in 1980. A revised and expanded version of the world mineral market simulation model is being prepared for issue in 1980 as is a computer model manual for it.

A monograph (entitled "Does Resource Conservation Pay?"), which was directed at the issue of alleged mineral resource scarcities on a world-wide basis, was accepted by the International Institute for Economic Research and published in the summer of 1978.

The mineral inventory work carried out in co-operation with Geological Survey of Ontario staff, which forms an important part of the data base for analysis and formulation of policy options for the Government of Ontario, continued; the mineral inventories of uranium and zinc are under constant review. The mineral inventory for nickel was completed and is going to be kept under review.

Work on environmental problems of the mining industry is mushrooming. The major issues here, with which policy in the minerals and in other fields still has to come to grips, are as follows:

SO<sub>2</sub> emissions, the acid rain controversy, the handling of tailings disposal problems, and the change in silica standards. Not all of these issues are being dealt with by the Ministry of Natural Resources as the lead Ministry; all of them are of great technical complexity; and all of them are of potentially deadly impact upon the Ontario metal mineral sector.

Consultant's reports on the changing structure of mine financing and of junior mine financing were published in 1978. Involvement in Onakawana is increasing. Two mine hazard land studies have been completed and are being reviewed. Work on a new Mining Lands Act is progressing.

Liaison with organs of the Federal Government, Provincial Government and some foreign jurisdictions, as well as

with mining company representatives, continued on matters pertaining to Ontario mineral policy and mineral industry matters of mutual concern.

As required the Section undertakes detailed analysis and recommendations of alternative solutions for any of the problems that affect the metallic mineral sector of the economy as they assume importance in the eyes of the public, the industry and this Ministry.

A major new responsibility for the coming years will be more effective dissemination of the results of the analytical work carried on in the Section to other government agencies and the general public to increase the understanding of the complexity of mineral sector problems.

A major new text book, "The Economics of Mineral Extraction", based largely on work carried out by Metallic Minerals Section in preceding years and co-authored by staff, was accepted and issued by Praeger Publishing Co., New York, N.Y.

## Industrial Minerals

The Industrial Minerals Section is responsible for all provincial policy matters related to industrial minerals. Legislation, policies and guidelines are recommended as they pertain to industrial minerals, including mineral aggregates.

The Section is also responsible for the uniform administration of The Pits and Quarries Control Act, 1971 and for the development of mineral aggregate policies and guidelines for local government to utilize when preparing mineral aggregate planning policies. The planning policy development function is currently being implemented through municipal official plans to ensure that proper direction is given to the protection of mineral aggregate resource areas.

The Section continually provides consultation and guidance to the Ministry's field offices. This is essential for the over-all monitoring of enforcement and uniform application of relevant legislation. The processing of pit and quarry applications from the Sudbury and Sault Ste. Marie areas of northern Ontario are still handled by the Section.

A major focus of activity throughout 1979 and the first quarter of 1980 has been the involvement with Bill 127, An Act to revise The Pits and Quarries Control Act, 1971, which received its second reading in December, 1979. The Bill flows from the Report of the Ontario Mineral Aggregate Working Party, which was submitted to the Minister of Natural Resources in December, 1976. The Section has been involved in hearing briefs submitted from the public and industry regarding provisions contained in Bill 127 and is now actively involved in having the Bill enacted as legislation.

The Section maintains liaison with, and provides its expertise to, aggregate producers and consumers, the general public and all levels of government.

Since 1978 the Section has been monitoring, and liaising with, consultants who have been contracted to carry out a bulk transportation study for mineral aggregates. The study will complement the earlier mineral aggregate studies which were completed for various parts of Ontario. The results of the study will be used to provide input to a planning process for the transportation of aggregate from more remote areas to meet future demand. This study will be released in mid-1980.

The Section is also funding a study on agricultural rehabilitation of pits and quarries, contracted out to the University of Guelph. Since some sand and gravel deposits are coincident with prime agricultural lands, there is the potential for conflict between the needs of the construction and agricultural industries. The study will examine this issue and methods of rehabilitating extracted lands for agricultural production.

The following publications, dealing with the rehabilitation of pits and quarries, were released during the year:

From Pits to Playgrounds: Aggregate Extraction and Pit Rehabilitation in Toronto;  
Trees and Shrubs for the Rehabilitation of Pits and Quarries in Ontario; and

Pit and Quarry Rehabilitation: The State of the Art in Ontario.

Extensive work has been started to improve our knowledge of the distribution, quality, extraction, processing, uses, supply and demand for the many industrial minerals found in Ontario. Among these are feldspar, gypsum, kaolin, nepheline syenite, silica, talc and whiting. Development of Ontario's rich inheritance of industrial minerals is being encouraged to meet expanded needs of domestic and foreign manufacturers.

## Mineral Statistics

The Mineral Statistics Section is responsible for the following functions:

1. Economic and statistical research as an input to the development of mineral policy options;
2. Development and maintenance of an economic and mineral commodity data base;
3. Annual survey of mining operations, mills/concentrators, smelters/refineries;
4. Annual census of mines, quarries and sand pits;
5. Shared responsibility with Statistics Canada for the mineral industry segment of the Annual Census of Manufacturers;
6. Shared responsibility with Statistics Canada for the Annual Survey on Exploration, Development, Capital and Repair Expenditures;
7. Shared responsibility with the federal Department of Energy, Mines and Resources for the Monthly Survey of Mining & Metallurgical Operators;
8. Collection and analysis for national and international data on all mineral commodities, prices, markets, consumption, imports and exports;
9. Publication of the Statistical Report on the Mineral Industry of Ontario;
10. Publication of the revised Ontario Mineral Review;
11. Consulting services in the field of mineral statistics to other branches of the Ministry, other Ministries and the interested public;
12. Administration of Part X-Refinery Provisions of The Mining Act;
13. Sharing, with Statistics Canada and the Department of Energy, Mines and Resources, the work of monthly and annual collecting, editing, storing, retrieving, analyzing and distributing of mineral information; and
14. Maintenance of a library of general mineral information including company annual reports to shareholders.

The 1979 Census and Survey of over 2,000 mineral operations were conducted in January, 1980. The Census will be closed out for final edit in September, 1980.

The Mineral Statistics Section has been reorganized to meet the following main objectives:

1. Develop a user-oriented computerized mineral data base;
2. Provide the analysts and administrators in the Mineral Resources Group and the Regions with more direct access to the mineral data base (normally without requiring assistance from the Mineral Statistics Section while, at the same time, maintaining the confidentiality of company data by using internally programmed tests); and
3. Increase the input of world mineral statistics by upgrading the level of data management.

A computerized source data base system called ArrowStat (Analysis of Regional Resources World Statistics) was designed in 1979 and early 1980 and will be developed and im-

plemented in late 1980. ArrowStat will be capable of applying complex statistical analysis to the data base of mineral resource information and of organizing data for use in econometric models. The system is designed such that the information needs of the Ministry of Natural Resource regions are considered to a far greater extent than in the manual system. The structure of ArrowStat is oriented such that the system will eventually be capable of accepting and analyzing statistics which are being input to data banks by large statistical agencies throughout the world.

Access to the Canadian Socio-Economic Information Management System of over 300,000 time series is now available at the Mineral Statistics Section interactively via computer terminal. This system is available for integrative economic analysis of the mineral economy. Recent studies have shown that this system can reduce many statistical analysis costs by half and can reduce file storage space significantly.

The Section contributes directly to the System by means of its operation of the Annual Census of Mines, Quarries and Sand Pits which, in 1980, for the first time, was fully handled by the Section except for the federal/provincial shared modification of the input forms.

## Mining Tax Assessment

The Mining Tax Assessment Section is solely responsible for the administration of The Mining Tax Act and Regulations. The office of the mine assessor is assisted by a staff of six assistant mine assessors whose roles include reviewing, auditing and analyzing annual tax returns. This process facilitates the mine assessor's appraisal of the "pit's mouth value" of minerals produced in Ontario and is followed by the issuing of tax assessment notices.

In the year ending March 31, 1980, the number of tax assessments issued increased by 40 per cent to 74 from 53 in the preceding year. The taxes on the assessments amounted to \$54,341,303.

Mining tax returns received during the year indicated tax liabilities under The Mining Tax Act in the amount of \$41,800,000.

The total of tax revenues collected for the year amounted to \$98,900,000, an increase of \$57,100,000 or 136.6 per cent over the \$41,800,000 revenues collected for the previous year.

This Section will be responsible for administering the new Ontario Mineral Exploration Program (OMEP) Act, 1980, and Regulation. A budget of \$4,000,000 in grants and income tax credits will benefit individuals and corporations who invest in provincial mineral exploration before March 31, 1981.

# Wildlife Branch

The objectives of the wildlife programs are to provide:

An optimum number and variety of wildlife-based outdoor recreational opportunities accessible to, and for the continuing benefit of, the people of Ontario;

A continuous, sustained, optimum contribution to the economy of Ontario through tourism and its related industries, and through the commercial utilization of wildlife; and

Protection, conservation and enhancement of the wildlife and wildlife habitat of the Province for its cultural value and to support the social and economic objectives.

## Policy Development

Policy Development Section determines the direction and intent of the Provincial Government with respect to wildlife.

A comprehensive provincial plan for wildlife has been undertaken. The first objective is to define more precisely than in the past the provincial government's responsibility for wildlife. The next is to determine an over-all Ontario wildlife strategy for the future to which work plans can adhere.

## Program Development

### Non-Game

Ontario's non-game program was formally established in March, 1979, with responsibilities encompassing both non-game and endangered species. A draft policy is now under review, in keeping with the Ministry's commitment to place a high priority on development of policy for all wildlife activities.

The endangered species component of the program is focussing on the preparation of status reports for candidate endangered or threatened species and the continued monitoring of species which are already designated under The Endangered Species Act. No additions have been made to the list of 13 officially designated species, although one candidate species has been identified.

The year 1980 is the fourth in a five-year project to reintroduce peregrine falcons to Ontario. Surveys for active bald eagle nests were repeated again this spring on the Lake Erie shoreline, and censuses of the northwestern Ontario population have also continued. Surveys for two other officially listed species — piping plovers and West Virginia white butterflies — were planned and initiated in southern Ontario.

### Small-Game Management

A comprehensive background plan for small game management was completed. Policy and program development for small game and waterfowl management, as well as for migratory bird management, progressed to the review stage.

Most populations of small game remained relatively stable. Hungarian partridge, woodcock, snowshoe hare and ruffed grouse should again be abundant in the next hunting season. Following a mild winter, pheasant numbers appear to have increased in the southwest. Cottontail rabbits undergo natural fluctuations in numbers and appear to be increasing from a recent, low population level.

### Waterfowl Management

A program to produce a wild breeding population of Canada geese in southern Ontario, started in 1968, has been most successful. Viewing and hunting opportunities continue to increase because of the estimated population exceeding 30,000 birds. Geese have become over-abundant in some areas, such as Toronto's waterfront, where conflicts with other uses of the land have been increasing. Efforts to reduce the waterfowl population are continuing in co-operation with

the Canadian Wildlife Service and a number of other agencies.

Waterfowl banding projects in 1979, to gather important management data for use by Ontario and the United States, are to be continued in 1980. Ontario co-operates with the Canadian Wildlife Service and a number of Atlantic and Mississippi Flyway States where the birds are hunted or spend the winter.

In the Hudson-James Bay Lowlands, the muskrat was free of snow early in the spring of 1980, a factor which favors production of Canada and snow geese. The effect of drought conditions in the midwest during spring migration, however, appears to have resulted in reduced energy reserves in breeding birds and depressed production in some areas.

In southern Ontario, duck production appears excellent for 1980 owing to favorable water levels which could provide one of the best production years on record.

### Moose Management

A comprehensive moose management plan has been developed in light of continued high demands on a declining moose herd by the public for hunting and viewing. A Ministry review of the plan was initiated and a public participation program, involving 72 "open-house" meetings, was carried out.

The results of the program showed that the public strongly supports the implementation of more effective management strategies to rehabilitate moose population. The provincial herd numbers about 80,000 animals, about one-half the capacity of the range.

A controlled moose hunt in the Kapuskasing-Hearst area (W.M.U. 23) was introduced successfully. The prime objective of this system of licensing hunters is to define and resolve problems related to allocation of the resource and develop the best procedures for carrying out more highly organized hunts in the future.

The success of the controlled hunt in W.M.U. 23 in regulating the harvest indicates that this technique can be applied elsewhere when long-range policies and plans require it.

### Deer Management

A new deer management program was approved and implementation of some of the components has begun. Components of the new program include the introduction of a selective harvest system in 1980; better control of losses to predators and poachers; the establishment of more gun seasons with controlled hunter numbers in agricultural areas; improved data collection and analysis; and enhanced habitat management. Standards and guidelines for the new program are being developed to ensure better utilization of existing staff and funding.

A shotgun season, with controlled hunter numbers, was held for the first time in part of agricultural southern Ontario in 1979. Approximately 1,650 hunters were authorized to hunt in Simcoe County and they took about 250 deer. Only six trespass incidents were reported by landowners and there were no reports of property damage or personal injury resulting from the hunt.

### Bear Management

Black bear numbers, though difficult to assess, are believed to be generally constant. Hunters take about 4,000 bears per year, and the number of bear hunters is increasing. Bears causing conflict with agricultural activities or public safety are trapped, and relocated whenever feasible, or destroyed.

The black bear resource is still not providing all the recreational and economic benefits which this species is capable of providing in Ontario. The development of a more active bear management program has been initiated.

## Wildlife Extension

Extension development Section provides public information on all matters related to wildlife and wildlife-based recreational activities. It develops provincial programs for conservation and management of privately owned lands as well as provincial programs of interpretation and education in both the public and private sector.

Studies during the year have included a survey on non-farming rural-landowner attitudes on wildlife and land use, a report on the economic aspects of wetlands, and the development of a Wetlands Inventory Manual.

Two films have been produced — "Wetlands Working for Us" and "Wildlife Habitats in Southern Ontario" — which are suitable for schools, naturalists' and sportsmen's clubs, and the general public. Work has begun on a series of information pamphlets on nuisance wildlife. The Section maintains a stock of pamphlets and other materials of an educational nature for the use of interested organizations and individuals.

Twenty-nine Provincial Wildlife Areas are maintained in southern Ontario to provide wildlife-based recreation on public land, and similar recreation is available on 13 Wildlife Extension Landowner Agreement Areas established with the co-operation of landowners to provide improved habitat and public access. Habitat is managed to produce wildlife for viewing and hunting and to protect wildlife populations.

The Section Maintains liaison with other governmental agencies and citizens' groups in the interest of conserving wildlife habitat and promoting educational efforts through the Ministry's 48 districts. These include National Wildlife Week and "viewing weekends."

## Wildlife Services

Ontario's Conservation Officers are responsible for the enforcement of The Game and Fish Act and various other Acts administered by the Ministry of Natural Resources. They are also appointed as Fishery Officers under the Fisheries Act of Canada and as Game Officers under the Migratory Birds Convention Act of Canada; they are authorized to enforce those Acts and regulations thereunder on behalf of the Government of Canada.

### Wildlife Surveys and Records

Records of four years' hunting and non-resident angling licences are maintained as a service to the public. Statistics on hunting, including participation rates, hunter success and harvest, and characteristics of participants, are obtained through mailed questionnaires. This information supplements and corroborates data obtained in the field and forms the basis for wildlife management planning.

### Furbearer Management

The 1978-79 trapping season had very significant increases in numbers of animals taken and prices paid for pelts. In total 14,983 trappers sold 929,196 pelts for more than \$20.2 million. The beaver catch of 170,644 animals was worth \$6.1 million; 526,890 muskrats were marketed for \$3.7 million; and 105,263 raccoons brought \$3.8 million. Royalties collected on fur totalled \$678,790.55.

Patents have been applied for on the new humane live-trap (a foot-snare device) which has been developed by this Ministry. Arrangements are being made to have this trap manufactured commercially and made available to trappers. It is especially efficient in capturing coyotes, foxes, raccoons and feral dogs without harming them.

Eighty new instructors have been trained as Trapper Instructors this year. A total of 12 Fur Harvest, Fur Management and Conservation courses have been given by professional trapper instructors to 360 persons interested in trapping. A comprehensive manual for this course is in preparation.

### Hunter Education

Progress continued in the expansion of the Hunter Education Program so that greater emphasis could be placed on hunting ethics, wildlife management, wildlife identification and bow hunting.

This expansion is additional to the traditional topics of firearm safety, safe hunting practices, survival and hunter-landowner relations. It upgrades the knowledge and skills of individuals applying for a first hunting licence.

The introduction of a revised Hunting Licence Examination in August further complemented the program and ensured that the minimum standards for the procurement of a provincial hunting licence were maintained.

The procurement and development of training aids, such as instructional films and Waterfowl Identification Guide, assisted the program instructor and ensured uniformity throughout the Province.

During the year 1,110 certified Hunter Education Instructors trained 35,080 students, and the Ministry's hunting licence examiners conducted 29,599 hunting licence examinations.

All administrative districts conducted instructor workshop while 25 program instructors completed the Ministry's Methods of Instruction course.

There was a total of 51 accidents of which five were fatal. This was a decrease of 14 injuries and three fatalities from 1978.

## Wildlife Research

Research seeks to fill our knowledge gaps by investigations of population dynamics, behavior, physiology, reproduction, diseases and parasites, and intersections between selected species and their habitats.

The rabies research program moved to a much higher plane of activity, based on a grant from The Provincial Lottery. Four major contracts were designed to foster development of an inactivated rabies vaccine, plus appropriate pill forms and coatings, so that the final product will be compatible with the best bait developed by the MNR team. Field experiments have shown that about 70 per cent of foxes will eat a bait, when baits are dropped from low flying aircraft, near the edges of woodlots, at an over-all rate of about 100 baits per square mile. Further, almost all those foxes ate their first bait within 28 days of the drop. Those field data are essential knowledge when trying to develop a vaccine.

The Rabies Research Unit is also developing, in co-operation with Queen's University, a computer simulation model of rabies outbreaks. This model uses field observations as input and will allow testing of various rabies control tactics, providing key information necessary for the design of a field program to control wildlife rabies.

A study of black bears in the North Bay area is nearing completion. Extensive information on movements, habitat use, food habits, survival and reproductive biology have been collected. Unique data on the survival of bears aged 1-5 years were collected. Behavior and survival of cubs (orphaned when the female is killed during the spring hunt) is a subject of another study.

Field studies of moose have revealed active searching for sources of dietary sodium from mid-May to mid-July. This has three potential applications. (1) A high percentage of moose-vehicle collisions result from moose seeking salt which accumulates in roadside pools after winter salting. Testing of

repellants and other means to keep moose from using these dangerous man-made salt licks is progressing well. (2) The creation of artificial salt licks may attract moose to places where park visitors may see the animals more easily. Moose are not attracted to cattle salt blocks but prefer very dilute solutions. Therefore, salting along the edge of a pool or small lake may be a suitable method. (3) Widespread increase of sodium availability may be one tool to enhance moose populations. However, such a program must be carefully thought out, in relation to other environmental implications.

The Section is beginning a study of the influence of winter ticks on survival of moose. Observations in the wild suggest that winter ticks may become a major source of mortality where moose occur in high densities.

Other studies included behavior of moose and deer, use of nest boxes by goldeneye and other ducks in northern Ontario, parasites and diseases of black bears, and numbers and reproductive success of polar bears. Publications on the latter subject and on long-term deer studies are in preparation.

Wikwemikong Reserve on Manitoulin Island at the request of the Band Council. The objective of this program is to provide guidance to the band in management of deer on Reserve land.

*Northern Policy Development.* Negotiation under the Tripartite Agreement (Canada, Ontario and the Chiefs of Ontario) to develop a policy for the management of wild rice and to recommend a mutually agreeable policy regarding Indian rights to wild rice made no headway. Ontario tabled a position paper regarding its negotiating position on Indian rights. Work continued on the development of a management policy in anticipation that negotiations would be resumed. Staff continued to participate in studies on proposed northern developments which have the potential to affect wildlife or wildlife habitat and policy statements, where applicable, were drafted.

## Resource Development (Native People)

The resource development programs assist the native Indian people of Ontario in the use of renewable natural resources for their economic benefit. The following projects were carried out during the year under the Federal-Provincial Resource Development Agreement.

*Fur.* This program provides for the placement of Indian trappers on vacant trapline areas. Aerial surveys are conducted and maps showing live beaver colonies are supplied to the trappers. Transportation of supplies, equipment and furs is also provided. Trappers' workshop are held to promote the improvement of trapping techniques and general handling of pelts.

*Commercial Fish.* Administrative and operational assistance is provided to native people in the Northwestern Region in their commercial fisheries activities.

*Tourism.* Seven goose camps were operated during the 1979 season by the Indian People along the James Bay and Hudson Bay coasts. Three goose camps have been turned over to individuals. Fort Severn Goose Camp was turned over to Mr. Jack Stoney of Fort Severn, Attawapiskat Goose Camp to Mr. Gabriel Spence, and Tidewater Goose Camp to Mr. James Richard of Moose Factory.

*Hide Collection.* In 1979 successful hunters provided nearly 11,000 moose and deer hides for the native people of Ontario. The continuing success of this program is due to advertisements and hunter contacts made over the years as well as the award of a "Bush Cap" to hunters who donate moose and deer hides. Presently there are more than 4,000 native people involved in the craft program. It contributes considerably to the native people's economy by providing material for handicrafts.

*Timber.* Assistance was provided to native people in various timber and lumbering operations and in reforestation and regeneration programs.

*Planning.* Representatives of Grand Council Treaty areas, No. 3 and No. 9, Union of Ontario Indians, and CORAID (Central Ontario Regional Amalgamated Indian Development) are members of the Resource Development Committee and assist Ministry and DIAND (Department of Indian Affairs and Northern Development) staff in planning programs of priority for the native people of Ontario as they relate to renewable resources. Indian Band Councils are also consulted about programs which would prove to be most beneficial to their members.

*Game Management.* Studies of deer populations, mortality rates and range potential have been conducted on

# Parks and Recreational Areas Branch

The Provincial Parks Branch was re-organized to become the Parks and Recreational Areas Branch on July 1, 1979, as part of the Ministry's Management Improvement Plan. The Branch now has four sections: Planning, Development, Operations, and Marketing and Communications. The last section is new and reflects increased emphasis on marketing of parks as part of a strategy to increase the tourism benefits from parks. The re-organization also reflects a broadened mandate for the Branch to develop policy for non-park recreational areas such as Crown lands, park reserves and recreation areas.

## Marketing and Communications

Greater emphasis is being placed on the tourism objective of the provincial parks system. Plans are under way to promote provincial parks and help to develop related tourist services and activities.

To meet these objectives, the new Marketing and Communications Section has developed a marketing plan for provincial parks. The major promotional efforts outlined in the plan will unfold in the spring of 1981.

The Parks Information Office has geared up for the expected demand by expanding into a Travel Counselling Service. To gain more public exposure, the Section encouraged frequent contact with the media.

By working closely with private-sector tourist accommodation representatives such as Resorts Ontario and the Ontario Private Campground Association, the Branch established a good base for over-all tourism promotion.

A new film entitled "In Search of a Perfect Campsite" was completed and a canoeing film was started.

Field staff made major strides in developing better relations with local tourism enterprises and improving community interest in the parks.

## Operations and Development

The number of campers using Ontario Provincial Parks in 1979 was 1,355,733. These campers stayed a total of 3,259,752 nights. The number of provincial parks in operation remained at 128. Improvements to the capital plant, particularly to water sewage, shower installations, roads and electrical distribution systems, continued to be priority projects throughout the park system.

Regional visitor services plans have been completed. Emphasis continued to be placed on developing self-guided facilities in the face of further program staff constraints.

A policy on hospitality and procedural guidelines, for staff training related to good customer service, was developed in 1979. Seasonal staff participated in the seminars arranged by the Ministry of Industry and Tourism's "We Treat You Royally" program. Special day-long seminars were conducted for all park superintendents.

## Off-Season Use of Parks

In Bronte Creek and Wasaga Beach Provincial Parks, outdoor skating rinks with artificial ice were offered to the public.

A free publication, Winter Outdoors, again provided a condensed description of recreation opportunities in all provincial parks during the winter season.

## Winter Trails

Through the Winter Trails Recreation Program, \$500,000 was made available in the form of grants to assist trail clubs

and Conservation Authorities with the grooming and maintenance of more than 14,100 km (8,813 miles) of snowmobile trails and 1,540 km (963 miles) of cross country ski trails. Work was started on a plan to co-ordinate the development and management of a provincial network of snowmobile trails. This will be done by the Parks and Recreational Areas Branch in co-operation with snowmobile clubs.

The Ministry maintained 620 km (388 miles) of cross-country ski trails and 1,540 km (963 miles) of snowmobile trails on Crown land.

## Access Points

Approximately 1,400 access points with parking areas and boat launch ramps were maintained to provide access to lakes and rivers.

## Interior Camping, Canoe Routes

During 1979, 73,961 people entered Algonquin, Quetico and Killarney Provincial Parks for interior canoe camping and hiking.

In 1979 regulations concerning the use of motor-powered boats in Quetico and Lake Superior Provincial Parks were amended to implement their respective Master Plans.

In Quetico motor boats have been restricted from all lakes. However, an exception was made for members of the Lac La Croix Guides Association in recognition of the Lac La Croix Indian Band's isolated location and its members' dependence on guiding for their livelihood. Members of the Guides Association may operate motor-powered boats with engine ratings not exceeding 10 horsepower on Quetico, Beaverhouse, Wolseley, Tanner, Minn and McAree Lakes and the Maligne River from Lac La Croix to Tanner Lake.

In Lake Superior Provincial Park the operation of motor-powered boats has been restricted to Sand Lake, where engines not exceeding 10 horsepower may be used, and Lake Superior where any engine may be used.

In total, the Ministry managed 24,140 km (15,000 miles) of canoe routes in provincial parks and on Crown land.

## Opinion Poll

A brief survey was undertaken to ascertain opinions of Ontario residents regarding a number of issues related to provincial parks. Results will be utilized in policy and program development for provincial parks.

## Park User Survey

A visitor survey program initiated in 1974 was continued in 1979 with surveys of day visitors in nine parks and campers in six parks.

## Waterway Evaluation

In co-operation with Parks Canada, the Northeastern Region has completed a pilot inventory of the outdoor recreation and heritage potential of the French River. This was undertaken to assist in the development of an approach to waterway analysis that might eventually be used in support of a Canadian Heritage Waterways system. The French River was chosen because of its acknowledged attributes.

## Nature Reserves

On March 26, 1979, a 'Nature Conservation Day' was staged to foster an appreciation of nature conservation in the government. The keynote address stressed co-operation between government and private agencies in the protection of natural areas.

The number of Nature Reserve Zones increased by 38 in

1979 with the approval of master plans for Lake Superior, Greenwater, Sandbanks and Pinery (five-year review) Provincial Parks. The additional area protected in these zones totalled 17,730 ha (43,810 acres).

## Planning

### Regional System Planning

During the year work continued on the Provincial Parks Systems Plan and completion was scheduled for 1981. Preliminary evaluations of existing parks and park reserves and estimates of needs (related to protection, recreation, heritage appreciation and tourism) have largely been completed in the eight regions.

### Recreational Land Acquisitions

Work continued on the evaluation of future parkland with emphasis on increased recreational facilities for southern Ontario residents. During the year, 2366 ha (5,847 acres) were acquired for outdoor recreation purposes.

### Master Planning

To date 24 master plans have been approved, 11 are pending final review and approval, and 31 others range between initial and advanced stages of completion. Approximately half the provincial parks have master plans completed or under way.

The first five-year reviews were completed for Algonquin and Pinery Provincial Parks and four other five-year reviews are under way.

Public participation continues to be an integral part of master planning for parks and for five-year reviews of park master plans.

## Provincial Parks Council

The Provincial Parks Council submitted its fifth annual report in December, 1979. The Council's principal accomplishment in 1979 was the completion for the first five-year review of Algonquin Provincial Park Master Plan, based on extensive public participation obtained by the Council. Dr. George Priddle continued to serve as chairman of the 10-member Council.

# Fisheries Branch

The objective of Fisheries Branch is to maintain and rehabilitate the fish populations of Ontario as a stable base upon which recreational, cultural and environmental benefits are provided to the people of this province.

Unfortunately the potential for fish production has continued to decline in many Ontario lakes and streams. A variety of stresses have been, and are, acting on fish populations to degrade certain fish communities, especially those in southern Ontario. The many stresses include the highly publicized impact of acid rain, over-harvesting, habitat degradation, and changes in water quality.

The decline comes at a time of increasing demand for fisheries resources by various groups. The result has been increased conflict between groups competing for a declining resource. To address these important problems, a long-term plan was prepared to identify future management strategies for the improvement of Ontario fisheries. This plan, the Strategic Plan for Ontario Fisheries (SPOF), received financial support from the Ontario government midway through 1979. Consequently 1979 was the year in which a series of steps were taken that will ultimately lead to the full implementation of the Strategic Plan.

It was under the umbrella framework of SPOF that programs were increased in scope and rechanneled to reflect new and exciting management directions. Major policy needs have been identified, and working groups set up to develop them. One of the first needs is to modernize the management and regulation of the commercial fishery.

In conjunction with the Canadian and United States governments and bordering states, agreement was reached on goals, objectives and strategies for the management of the Great Lakes. The result of these agreements will be the Strategic Great Lakes Management Plan in a form similar to SPOF.

To deal with overlapping responsibilities between this Ministry and the Ministry of the Environment, particularly in relation to water quality, a liaison committee has been set up to identify common goals, mandates and approaches to standards, research and enforcement.

Boating regulations continued to be co-ordinated by Fisheries Branch. Input for the development of new regulations is obtained from private citizens and agencies. Boating Regulations (1980) were printed and distributed to provincial and federal agencies and private interest groups. The provincial response to projects under the Small Craft Harbour Marina Policy Assistance Program continued to be co-ordinated by the Branch. Liaison was provided between the Federal Small Craft Harbour's Branch and the Provincial Interministerial Committee on Great Lakes Access.

## Fish Culture

The Fish Culture Section is responsible for planning and co-ordinating production of eggs and young fish to be stocked in selected Ontario waters. During the year, 13.5 million eggs and 6.0 million fish were stocked. Forty-two per cent of the fish were released in the Great Lakes and their tributaries. All the remaining fish and eggs were planted in 1,100 inland waters. The eggs included those of brook trout, lake trout and walleye (yellow pickerel).

Approximately 23 per cent of the species stocked were salmonids, including aurora (<1%), brook trout (4%), lake trout (8%), rainbow trout (5%), splake (4%), coho salmon (1%), and chinook salmon (<1%). The remainder were maskinonge (8%), walleye (69%), and smallmouth bass (1%).

Maintenance of the fish culture data base was continued to keep track of production and distribution. A standard report format was developed and a monthly reporting system was established for the hatcheries.

Renovation of the main hatchery at Dorion was completed in 1979 and planning for the renovation of Hill Lake Hatchery continued.

An agreement between the Ministry and the University of Guelph permitted the continuation of disease diagnostic services and nutrition studies.

Disease monitoring of our own facilities continued. Three fish culture stations were disinfected to eradicate disease organisms.

The special projects that were initiated in 1977 were continued; these included studies of the feasibility of culturing white fish for the rehabilitation of Lake Simcoe and techniques for the advanced culture of walleye.

In 1979, with the new SPOF funding, two additional staff were hired — a production planning biologist and a fish health biologist. Feasibility studies were carried out for the construction of a substation at North Bay and for the reconstruction of the Tarentorus main station and/or construction of a substation.

An aerial thermographic survey of selected eastern Ontario watersheds was carried out as a part of a search for new hatchery sites. A study was conducted by an outside consulting firm to determine the feasibility of contracting hatchery fish production to the private sector. Construction of an experimental whitefish rearing facility at the Glenora Research Station began in 1979. Plans were developed for a search for new sources of wild lake trout eggs in North Central Region. Several sites were investigated and eggs taken.

## Environmental Dynamics

The Environmental Dynamics Section is responsible for the development and implementation of policy that affects fish habitat and its management. Activities include inventory of lakes and streams, habitat protection and maintenance, contaminants in fish, acidification of natural waters, and fish habitat rehabilitation. The Section does not control projects in these areas; rather, the management of fish habitat is a responsibility of each district office.

Through its SPOF program, the Ministry is committed to prevent losses of fish habitat, and wherever practical to rehabilitate degraded areas with their fish populations.

In 1979 more than one-half million dollars were spent on repairing damaged fish habitat. Projects included work in streams and lakes of northern and southern Ontario in the interests of such species as brook, brown, rainbow and lake trout as well as walleye. In other areas, adult fish were trucked past dams blocking migration routes and released in spawning areas upstream. Rainbow trout were introduced into the artificial spawning channel on Cobourg Creek where successful reproduction occurred.

Fishways, on dams blocking migrations, passed more than 10,000 adult rainbow trout in 1979. Construction began on the first-in-Canada fish lock on the Beaver River at Thornbury; testing and operation is expected to begin in April, 1980. This facility will allow rainbow trout into many miles of previously inaccessible spawning habitat.

In co-operation with the Ministry of the Environment, the Ministry has started a program to study the effects of acidic precipitation on fish and habitat. In 1979 research and development contracts were let with universities and consultants. More than 450 water samples from 250 waterbodies were collected to determine their ability to buffer acidic precipitation. More work in an expanded program will be undertaken in 1980.

The inventory of lakes and streams continued in 1979 when additional 350 km (217 miles) of streams and 500 lakes were surveyed. The lakes ranged in size from 72,000 ha to 170,000 ha (179,000 to 420,000 acres). This brings the eleven-

year total in this program to 10,000 lakes and 750 streams.

Some representatives of certain fish species continue to be contaminated with heavy metals, pesticides and other potentially hazardous chemicals. In 1979 approximately 10,000 fish from several hundred waters were collected for testing by the Ministry of the Environment to provide advice to anglers and assist International Joint Commission programs on the Great Lakes

## Population Dynamics

The major function of the Population Dynamics Section is to improve the technical competence of field staff by providing advice and expertise and communicating the results of recent advances in fisheries science and management pertaining to fish community dynamics. Critical review of field reports is an essential component of this function. The Section participates in Lake Superior, Lake Huron, Lake Simcoe and Algonquin fisheries management committees.

Geographical reference atlases for lake trout and yellow pickerel lakes in Ontario were completed. A similar reference atlas for brook trout was initiated. The Section assisted in the selection of a suitable donor lake for natural rearing of a specific genetic strain of lake trout; this lake will serve as a pool from which eggs and young will be collected for stocking in Lake Simcoe when water quality has reached an acceptable level to permit rehabilitation. The Section organized a Fisheries Assessment Unit training workshop for about 100 field staff.

## Fisheries Research

The Fisheries Research Section undertakes or arranges investigations to provide the basic understanding needed for optimum, scientific management of Ontario's fish resources. It carries out relevant research, publishes the results in internationally recognized scientific journals, and makes its specialized expertise available to all levels of the Ministry.

The multi-disciplinary Lakeshore Capacity Study, carried out over the past several years in close collaboration with the Ministries of Environment and Housing, is nearing completion. Results of the inquiry into the impacts of fishing by cottagers and others (as a consequence of development of Ontario's recreational lakes) are in the final editorial stages before becoming available for management application and publication. The impacts of other development activities (such as dredging, filling, weed removal, dock building and boating) on spawning, nursery and feeding grounds of important fish species are proving harder to evaluate although the study has clearly shown that critical areas, essential to maintenance of fish stocks, do exist.

The problem of acid rain and the often-associated heavy metal contamination, plaguing Ontario's recreational lakes in the middle north, is receiving attention. The Harkness Laboratory in Algonquin Provincial Park, in the centre of the vulnerable area, is collaborating with other Ministry staff in intensive studies of the exact nature and extent of the impacts of this new stress on the important and long-studied fish stocks of the area. Emphasis is on precise measurements of reductions in survival and reproductive success of lake trout, brook trout and smallmouth bass, and on defining exactly how they are brought about.

A capability is rapidly being developed to extend the studies to other elements of the biota. In support of this work, studies of the impacts of acid on the growth of fish are being carried out by scientists based at Maple. Studies of the toxicity of acid waters are being carried out by Sault Ste. Marie staff in work which is integrated with a federal study on the Turkey Lakes north of the Sault. And studies of the impacts of acid on the aquatic communities of small boreal lakes are being con-

ducted north of Lake Superior. Research staff are active on the inter-ministerial committees formulating, implementing and auditing Ontario's attack on the acid rain problem.

The back-cross strain of hybrid splake, reported last year as offering promise for rehabilitating the depleted sports fisheries of Georgian Bay and Lake Huron, this spring enjoyed a spectacular and well publicized success in southern Georgian Bay. With the addition of a second planted year-class this spring, the Ministry anticipates having to cope with the pleasant problems of making a successful solution to a once-vexing problem more widely available. Moreover, the superiority of first-generation splake over either brook or lake trout, for the planting of small, barren lakes in the north, is now beyond dispute, and the confirmatory analyses will be ready for publication and application by management later this year.

The intensive evaluation of available genetic stocks of wild Ontario brook trout, lake trout and whitefish has been extended. Staff have been surprised by the major difference between whitefish from various waters which have been revealed by this work. The full meaning of these differences has yet to be evaluated but it seems a good bet that the success of efforts to use hatchery reared whitefish to rehabilitate depleted waters will be heavily dependant on using the right strain in the right place.

Papers presenting Ministry results to the coming international Stock Concept Symposium, to be presented at the Nottawasaga Inn later this fall under the auspices of the Great Lakes Fishery Commission, will provide an opportunity to extend the analysis and interpretation in company with a distinguished group of experts from the British Isles, Scandinavia and Russia as well as the United States and Canada.

Special efforts continue to be made to analyse backlogs of information by machine data processing facilities at Maple and at the field research stations. Excellent progress has been made in dealing with the 20 years of experimental material accumulated from the splake program and that phase of research is now essentially complete.

A major paper, integrating the Ministry's research on factors affecting year-class strength in smallmouth bass, also emerged this year from this work and re-united in its authorship former employees now with the University of Toronto and the federal government, as well as Ministry staff, to recapture an earlier investment. Consideration is currently being given to improving the computing capacity available to the research group as part of a larger evaluation of the "information system" needs of fisheries staff throughout the Province.

In collecting data, fisheries scientists often obtain information of immediate use to local district staff and they may advise local management staff. They also act as technical representatives of the Ministry on interministerial and federal-provincial committees, the International Joint Commission for Boundary Waters and the Great Lakes Fishery Commission.

## Client Services

The Client Services Section is responsible for the formulation of provincial policy and procedure, setting provincial work plan and program priorities, program evaluation audit and staff training, and the provision of special services in those areas which fall outside the scope of the other sections. These include provision of automatic data processing and programming based on the provincial fisheries information system, public involvement, private land extension, administration of legislation, regulations and enforcement, allocation guidelines, fisheries planning, developing economics on a cultural and biological rationale for fisheries management and allocation strategies, administering Fisheries Industrial Development grants and the Freight Equalization Assistance Program, and

developing sociological rationale and expertise for the implementation of management strategy.

Among the areas for which Client Services is responsible is the licensing and administration of commercial fisheries, including both food fish and bait fish. The number of bait fish licences declined slightly in 1979. The number of commercial fishing licences issued in the past five years has remained relatively constant but the capital investment has nearly doubled from \$19 million in 1974 to \$34 million in 1979.

The over-all commercial fish harvest declined slightly in 1979 but due to escalating prices the total value of the harvest increased to almost \$26 million. As in previous years, yellow perch remained the dominant species, accounting for 24 per cent of the total landings and 54 per cent of the total value.

The commercial landings of individual species remained relatively constant from 1978 to 1979 but some exceptions were evidenced. The traumatic decline in white perch harvest (down 79%) and less extreme declines in burbot (down 26%) and lake whitefish (down 24%) were recorded. Increases in total harvest were observed for five species — Pacific salmon (up 88%), crappie (up 47%), carp (up 37%), yellow perch (up 23%) and yellow pickerel (up 19%).

The fishery in Lake Erie continued to produce the largest harvest in Ontario accounting for more than 70 per cent of both the provincial harvest and its dollar value.

Under the Federal Fisheries Industry Development Program, a study of fish populations in the James Bay area was made to determine if there was a potential for commercial harvest. A study of the potential harvest of bait fish from ponds and the types of equipment necessary was conducted. Commercial fishermen participated by testing trap and hoop nets. A stock assessment of lake whitefish was conducted in Lake Superior to determine the year-class strength and, hence, the potential for further utilization. Lake Huron and Lake Erie populations of yellow perch were estimated.

On Lake Erie, methods for setting new quotas on the commercial harvest were discussed with commercial fishermen. On Lake Ontario, quotas were set on walleye, lake whitefish, lake herring and American eel. Negotiations were initiated on quotas for Lake Nipigon. Quotas on Lake Superior were held in abeyance until certain issues have been more fully addressed.

For the fourth successive year the number of angling licences sold to non-residents increased slightly to reach approximately 674,000.

Two additional staff were added in 1979 to assist in the development of fisheries management programs — a public involvement co-ordinator and a fisheries economist.

Preparations were made for contracting of a major study on the future development of the Ontario Fisheries Information System (OFIS), a computer based information system which provides management information for fisheries biologists. The study is to assist in the definition and selection of options for the future development of OFIS.

# Land Use Co-ordination Branch

The Land Use Planning, Special Projects, and Policy and Planning Sections, which comprise the Branch, continued to co-ordinate Ministry land use planning. They assisted other ministries and planning agencies, such as municipalities, with land use plans. The Branch updated environmental assessment procedures for Ministry undertakings and co-ordinated Ministry environmental assessment responsibilities.

## Strategic Land Use Plan

A strategic land use plan is being prepared for each of the Ministry of Natural Resources' planning areas — northwestern Ontario, northeastern Ontario and southern Ontario. In southern Ontario the plan is called the Co-ordinated Program Strategy.

The purpose of the strategic plans is to provide an over-all framework within which land use plan are to be prepared for each administrative district. When district plans are completed these will provide the primary means of co-ordinating all Ministry of Natural Resources programs which require land or water.

The planning process for strategic land use plans is divided into three basic phases: (1) collection and analysis of background information; (2) formulation of policy; and (3) preparation of the plan. Progress in the planning regions is as follows.

**Northwestern Ontario.** The draft plan is completed and approved and will be released as soon as copies are available from the printers.

**Northeastern Ontario.** The draft plan is completed and approved and will be released to the public after printing.

**Southern Ontario.** A draft co-ordinated program strategy has been completed for review by the planning region staff.

## District Land Use Planning

The three regional Strategic Land Use Plans will provide policy direction for more detailed land use plans which are being prepared for each of the Ministry's 48 districts. District land use plans follow the same three-phase planning process. All districts began the collection and analysis of background information during the past year. Completion of the district land use plans is targeted for March 31, 1983.

The Ministry's West Patricia Land Use Plan, occasioned by the proposed licensing of new Crown timber limits north of Dryden to Reed Paper Ltd., will be a composite of the Red Lake, Sioux Lookout and Geraldton District Land Use Plans.

The Branch completed revision of the Land Use Planning Guidelines which were originally prepared in 1974. While these guidelines have been specifically developed for the purpose of preparing Ministry district land use plans, they can also be used as a general guide for all levels of Ministry land use planning. The approved Guidelines will be released in 1980-81.

A brochure titled "Land Use Planning by the Ontario Ministry of Natural Resources" was prepared for distribution to the public.

## Plan Input and Review

The land and water base for meeting the Province's long-term natural resource needs must not be adversely affected by the actions of others. Seeking to assist and influence these actions through input to, and review of, other agencies' plans is, therefore, an essential activity of the Ministry.

Much of the Ministry's plan input and review activity continues to be directed at municipal planning and at private development proposals, both of which fall under The Planning

Act. Planning assistance and review is also carried out with other other provincial and federal ministries and agencies. During the year Ministry field offices continued to provide input into, and review of, other agencies' proposals, hydro facilities, highways and pipelines on a local basis.

The Plan Input and Review Handbook, designed to guide field staff and promote consistency throughout the Ministry, was finalized and distributed to field offices. Refinement of policies and procedures in this area is an ongoing activity. The Branch audited four Regions in the plan review activity and two Regions for their involvement in major plan inputs to help ensure a high level of performance.

Major plan inputs by the Branch was directed towards the CORTS reports and the Porter Commission on Electric Power Planning. The Branch co-ordinated the Ministry's review of the White Paper on The Planning Act and the draft Planning Act. The Branch continued its representation on the Hazard Land Implementation Committee which is preparing procedural guidelines for the implementation of the Flood Plain Criteria policies approved this year by the Cabinet of Ontario.

## Policy Planning

The co-ordination of policy and planning for the Lands and Waters Group has been assigned to this Branch. The integration of policy and program development across the Group is regarded as an essential prerequisite for more effective land and water management. The development of an umbrella Lands and Waters policy statement is a first priority in this task. Other important aspects include development of policy on specific topics related to land use and land and water management; the recommending of Program priorities; and the co-ordination of proposed development activities within the Group.

## Environmental Assessment

The Branch continued to develop and assist in the development of class environmental assessment for a number of undertakings. The task of continually refining the Ministry's responsibility under The Environmental Assessment Act was also an important part of the Branch activity.

## Land Use Related Projects

The Branch continued to provide Ministry co-ordination for two land use related projects, The Reed Proposal and The Royal Commission on the Northern Environment. It also continued to co-ordinate the Ministry's participation in the Lakeshore Capacity Study.

The Ministry is investigating the feasibility of updating (plus preparation where necessary) and maintaining a land and water inventory for the Province. The Branch has participated with Environment Canada in the application of an ecological (bio-physical) land classification system that it is developing.

The Ministry provided a comprehensive review of policy and planning reports prepared for the Rideau-Trent-Severn Corridor by the CORTS Secretariat. It continued to review the planning reports prepared by the Niagara Escarpment Commission and will monitor the hearings to take place in 1980-81.

# Surveys and Mapping Branch

## Surveying Services

Surveying Services is one of three divisions within the Branch; it encompasses Surveys and Geographical Referencing.

### Surveys

Surveys examines plans of survey for alienation of public land, arranges for private sector legal surveys required for Ministry administrative purposes, and maintains custody of plans and field notes of original Crown surveys and provides expert opinion on their interpretation.

The Section administers agreements with municipalities for the performance of co-ordinate surveys and prepares instructions for municipal and Crown resurveys under The Surveys Act, examines the returns of survey, arranges public hearings and prepares the surveys for confirmation.

The program of township boundary resurveys, carried out by surveyors in private practice under instructions, continued with 325 miles completed, compared to 285 in the previous year.

A total of 243 cottage lots were surveyed in plans of subdivision in the northern administrative regions, compared to 454 last year.

Survey service to regions and other branches continued to be provided as requested.

Two agreements for the performance of control surveys and installation of monuments were in effect with municipalities. No new agreements are under negotiation.

### Geographical Referencing

This Section plays a lead role in the development and promotion of geographical referencing standards. In 1979-80 its activities were primarily focused on the development of a pilot geographical referencing system through an agreement with the University of Guelph. The first phase of this development is scheduled for completion June 30, 1980.

The Interministerial Committee on Geographical Referencing (ICOGR) continued to promote and encourage the use of geographical referencing standards throughout government. ICOGR played a major role in determining the content of the specifications included in the agreement between the Ministry and the University of Guelph.

Specifications and Guidelines for horizontal control surveys in Ontario were published.

A computer program (MACSPLOT) was developed for the purpose of automatically plotting horizontal control survey data.

The data input phase of the provincial horizontal control survey data bank (COSINE) was completed and the data input format finalized. A variety of enhancements were incorporated into COSINE which will, upon its completion, expedite the readjustment of secondary control survey networks in Ontario. The data for approximately 2,000 horizontal control survey stations were compiled and formatted for input into COSINE.

## Mapping Services

Cartography, Drafting Services, Nomenclature and Ontario Basic Mapping are brought together under Mapping Services which has the responsibility for mapping support to all Ministry programs. Efforts to coordinate the mapping activities of the Ontario Government, its agencies and municipalities is also part of its responsibility.

### Cartography

Cartography Section generates the Provincial and Territorial Series of maps and handles the Ministry's major map

brochures and allied colored graphics. Its greatest workload lies in the preparation of a variety of multi-coloured lithographed maps for the Ontario Geological Survey and the Outdoor Recreation Group of the Ministry. Important clients include other ministries.

Some highlights in 1979 included the completion of Phase I of The Northern Ontario Engineering Geology Terrain Study (55 maps), and a revision of the Geological Highway Map of Southern Ontario. Production commenced on a similar map for northern Ontario.

Field base maps for the Ontario Geological Survey increased 10 per cent over the 1978 production which was itself 400 per cent of a normal field season demand. It is planned to extend coverage of the Provincial Series in the Red Lake, Lake St. Joseph and Moosonee areas. Three maps are currently in production and a further seven are scheduled.

Continuing assistance was provided to the Ontario Basic Mapping program with photo-mechanical and other support services and through secondment of staff.

### Basic Mapping

The Basic Mapping Section administers the Ontario Basic Mapping Program which will provide a system of orderly topographic mapping, covering Ontario as scales suitable for provincial and municipal needs, and the Regional Priority Mapping Program, intended to accelerate basic mapping in designated areas.

*Ontario Basic Mapping.* Ontario will be covered at 1:20 000 with 10 m contours in northern areas and 1:10 000 with 5 m contours in southern areas. Urban areas of the Province will be mapped at 1:2000 with 1 m contours.

The program is proceeding in two stages — start-up for the first three years and then main production for ten years, by which time the Province will be adequately mapped.

Surveying and mapping is carried out by private industry; the Ministry supervises the program.

During 1979 the Section entered the second year of the start-up phase, simultaneously building up the staff and undertaking a considerable amount of mapping according to priority guidelines furnished by an earlier ad hoc inter-Ministry committee.

A standing Priorities Committee, representing ten ministries, was convened and at year-end was in the process of establishing ongoing provincial basic mapping priorities.

Medium-scale mapping at a scale of 1:10 000 continued in the areas from London to Niagara Falls; 103 maps were completed. Mapping control and air photography was installed in eastern Ontario, enabling planimetric mapping to be commenced in the Brockville-to-Hawkesbury area; 154 maps were completed. Nine 1:20 000 scale photomaps were completed in the Moosonee areas. And 1:2000 large-scale mapping of 25 communities in southern Ontario was commenced and is scheduled for completion in April 1981.

### Regional Priority Mapping

The Ministry of Northern Affairs, under the Regional Priority Program, continued to provide funds for mapping in designated northern areas. Thirty-nine 1:20 000 scale maps were completed in the Iron Bridge-to-Espanola area. The production of 50 maps marked the commencement of mapping in the Coniston-to-Mattawa area. Large scale mapping (1:2000) of 38 communities was completed and 20 others were started, 18 scheduled for completion by April, 1981, and two by April, 1982.

The Section continued to map areas near nuclear power facilities with funds specially designated for the purpose. This mapping is provided as a contingency measure against nuclear or other emergencies. Eighty-seven 1:10 000 scale maps have been prepared to date and more are planned.

## Drafting Services

Drafting Services Section provides a wide variety of drafting, mapping and graphic support services to Ministry programs with some minor support to other ministries that lack this capability. Its production is mostly in black and white.

Its major series of maps and plans are essentially graphic indexes to the status of land (most Crown land) showing the disposition of surface and sub-surface real property rights, or illustrating forest resources, geological and mineral resources, lake resources, land use capability and conservation matters. Prints are available through the Public Service Centre.

Major production was as follows.

Forest Resources Inventory Base Mapping — 40,145 km<sup>2</sup> (15,500 sq.mi.)

Forest Stand Mapping — 51,800 km<sup>2</sup> (20,000 sq.mi.)

Mining Claim and Township plans — new bases 40, revised plans 5,037

Preliminary Geological Maps — 158

Miscellaneous charts, tables, graphics — 1,163.

## Nomenclature

Nomenclature Section maintains the official record of geographical names of features such as natural lakes, rivers and islands and unincorporated populated places in Ontario. It provides services to the Ontario Geographic Names Board by maintaining records of OGNB recommendations to the Minister and of ministerial approvals. It also assists with arrangements for Board meetings and with Board correspondence.

It conducts toponymic surveys, submitting its findings for OGNB consideration, and furnishes nomenclature information to government agencies and the public as required.

During 1979 it conducted toponymic surveys in Owen Sound, Collingwood, Niagara, Tillsonburg, Cambridge, Eastern Ontario, Dryden, Norfolk, East Niagara, Simcoe, Aylmer, Long Point, Metro Toronto and Sudbury-Killarney areas.

## Ontario Centre for Remote Sensing

The Ontario Centre for Remote Sensing conducts projects applying the analysis of aerial photography, other forms of aerial imagery and satellite data to resource management fields. Projects are undertaken in co-operation with ministries, primarily, but also with universities and the private sector. Through these projects and in-house research programs, new methodologies of remote sensing application are developed, and the practical usefulness of new forms of remote sensing data investigated. In 1979-80 more than 60 research and application projects were undertaken.

Field work was completed in support of the biophysical classification of the Hudson Bay-James Bay Lowlands in the summer of 1979. A procedure for map production using visual, analogue and digital analysis of satellite data, together with a computer-linked color plotting system, was developed.

Map and report preparation for the surficial geology mapping of northern Ontario continued.

The Centre undertook a pilot project to determine the extent to which the digital analysis of Landsat data could fulfil the requirements of the Ministry of Agriculture and Food for periodic agricultural land-use updates. A trial application project to employ digitally-analyzed Landsat data for land use and land cover type mapping was begun. The methodology has potential application over the entire Province.

Testing of the aerial photographic methodology for the assessment of forest regeneration success continued, in

preparation for trial application in six Ministry districts in 1980-81.

At the request of the Aviation and Fire Management Centre, maps of cutovers that occurred between 1972 and 1978 for the entire province were produced from the visual interpretation of Landsat imagery, to provide the basis for an inventory of potential fire hazard and prescribed-burn sites.

The Centre continued the development of an aerial forest sampling procedure. The programs to detect forest damage by disease and infestation also continued.

Tests of two metric aerial photographic scales 1:10,000 and 1:20,000, were undertaken for a study site in Southern Ontario to determine the interpretability of each scale for forest inventory parameters. When testing is complete in 1980-81 for a northern Ontario site as well, the OCRS will advise the Forest Resources Inventory as to metric conversion.

The OCRS performed a test project in the mapping of forest types north of 52°N latitude, the present northern limit of Ontario's forest inventory program, by the digital analysis of satellite data. Results were within 84 to 94 per cent of the results obtained by standard airphoto interpretation for the test area, depending on the forest type.

The evaluation of airborne synthetic-aperture radar imagery for forest regeneration assessment and structural geological mapping was continued, and the evaluation of satellite-borne radar data for geological applications undertaken. Preparation of a guidebook in the interpretation of radar imagery for use in several different disciplines was begun.

The OCRS co-ordinated the acquisition of aerial thermography and obtained support aerial photography of Kingston, St. Catharines and Cornwall. The Centre participated in energy-conservation clinics conducted by the Ministry of Energy in these cities. Thermal and photographic coverage was also obtained of Belleville and Pembroke. Enlargements of thermography obtained in 1978 were prepared for managers of selected commercial, industrial and institutional buildings in Peterborough, and interpretation instructions supplied.

Aerial thermography was also applied to the mapping of hot-water discharge from the Pickering Generating Station, and to the location of groundwater springs for the selection of fish-hatchery sites.

The OCRS undertook the development of a technique for the quantitative mapping of chlorophyll in lakes by digitizing aerial photography.

In co-operation with the Hydrometeorology Unit of the Conservation Authorities and Water Management Branch, the Centre began a project to investigate the use of Landsat satellite imagery to provide data on the areal extent of snow cover as input to flood forecasting. A test was also made of the use of airborne gamma ray spectrometry for gathering snow water-equivalent data.

The Centre commissioned software development to increase the capability of its Norpak PDP 11/34 digital analysis system, and purchased an Applicon Colour Plotting System which produces annotated colored maps at a variety of scales, directly from the digital image analyzer.

A Daedalus thermal infrared linescanner was purchased for OCRS use by the Ministry of Energy to meet the increasing demand for thermographic coverage of building heat loss, and for research into natural-resource-related applications of airborne thermography. OCRS staff completed an intensive training course in the use of the Daedalus system. To accommodate the scanner, The OCRS arranged for the lease of a Navajo Chieftain aircraft with two sensor hatches.

A review of the district supplementary aerial photography (SAP) operations was undertaken, and the Centre's SAP training procedure adapted to field requirements. The difficulty of aircraft acquisition for field SAP work was communicated to regional directors, and plans were made for a

study of the standardization of SAP equipment province-wide.

A comprehensive program of remote sensing technology transfer, to government, industry and universities simultaneously, began in 1979-80. Seminars and workshops were initiated for government professionals and managers; private industry was offered training assistance; and universities were offered several types of assistance with training students in practical remote sensing application, and with research and application projects. All three sectors expressed interest in participation in the program. The technology-transfer program will be an on-going activity of the Centre.

The OCRS conducted nine training courses in 1979-80. Three introductory seminars in remote sensing application were given for professional staff, one seminar for managerial staff, and one specialized course for fire protection personnel. Two courses in photo interpretation and remote sensing for forestry conducted for Ministry personnel and staff of private consulting firms, one concentrating on Great Lakes-St. Lawrence forest conditions and the other on boreal forest conditions. Courses on the field identification of soils and soils mapping were presented.

The OCRS was co-organizer of, and host to, the Remote Sensing Symposium of the Canada-Ontario Joint Forest Research Committee.

Through the Canada-Germany Scientific Exchange Program of the federal Department of External Affairs and the Ministry of Intergovernmental Affairs, The OCRS was host to a scientist from West Germany who took part in field work for the biophysical classification of the Hudson Bay-James Bay Lowlands.

Advice and assistance in the use of remote sensing imagery and methods of analysis were provided to many hundred of visitors to the Centre. Fifteen scientific papers were delivered at national and international conferences. International visitors to the Centre included the national remote sensing co-ordinators of Peru and Venezuela, scientists from England, Norway, Finland, India and Japan, and a group of geologists and engineers from the People's Republic of China.

# Land Management Branch

Crown lands, including mining lands, within the Province are managed by the Branch. Its responsibilities include the administration and disposition of public and mining lands, acquisition of private lands, issuance of Crown title documents, and co-ordination of the Ministry's resource access program.

## Public Lands

The Public Lands Section has two primary functions: management of the Province's 90 million ha (222 million acres) of Crown land outside provincial parks, and disposition of rights in public lands and waters.

Land management includes control of uses and users (75 million "user occasions" per year for recreation alone); the operation of garbage and litter control systems; the control of unauthorized occupations; the overseeing of construction of roads, pipelines, etc., on Crown land; control of development on private lands in restricted areas; and lake planning.

Land disposition encompasses the granting of rights (ranging from freehold to agreements for use of waters for power generation) to a wide variety of clients — individuals, corporations, other governments and government agencies. It includes the follow-up administration of transfers, renewals, cancellations, etc., of tenure documents including leases in provincial parks.

The Section co-ordinates land-related training of staff and the provisions of information and advice on public lands to the general public.

Section programs are implemented by field office staff. The main office group formulates policy, directs field offices through policy and procedure directives, monitors field performance through periodic field audits, and provides technical guidance to field offices.

Commencing in 1979, Crown cottage lots, offered by lease only in recent years, were made available for purchase by eligible applicants including Canadian corporations. Lessees of existing cottage lots in subdivisions are allowed to obtain freehold title to their lots at market value prices.

## Mining Lands

Under The Mining Act, the Mining Lands Section is authorized to manage Crown mining lands as follows:

- (a) Setting policy, formulation and interpretation of statutes, and procedure directives;
- (b) Auditing Mining Recorder's offices;
- (c) Auditing regional programs relating to all quarry permits and The Beach Protection Act Licences issued; and
- (d) Assessing all geophysical, geological and other technical survey reports submitted for assessment work.

Under The Beach Protection Act, the Section licenses the removal of sand or gravel from beaches, banks or waters of all lakes and streams and regularly monitors such operations. These licences cover removals by private individuals as well as large commercial extractions which provide considerable revenue in the form of royalties. Liaison with the Ministry of the Environment and field staff specialists ensures that erosion or significant damage to the fish population or local ecology is prevented. Municipalities operating for municipal purposes are exempt from the Ministry Licensing and supervision.

## Land Acquisition

The purchase of private lands required for various Ministry programs is a major function of Land Acquisition Section. This entails co-ordinating priorities for acquisition, determining

budget requirements, overseeing and approving each purchase, and maintaining a computerized statistical control and data bank.

Around 257,481 ha (636,250 acres) have been acquired since the Section's formation in 1962 — 2,480 ha (6,130 acres) during the past year.

Newly acquired properties are managed on an interim basis to generate revenue and protect them for their eventual Ministry use. Low-priority lands are sold or exchanged for other properties more critical to Ministry needs. The Section is responsible for providing market-value appraisals of Crown land for dispositions to ensure a consistent market-value basis Province-wide.

## Titles

The Titles Section prepares and maintains a written registry of the legal documents required for the ultimate disposition of Crown lands. It is responsible for the maintenance of the Ministry filing system that is used in conjunction with the registry for the administration of the Crown land base of the Province. A program to computerize the indexes of these land parcels, their survey plans and related file records has begun and is targeted for completion in 1984.

The Section levies mining acreage tax and carries out procedures necessary to effect forfeiture to the Crown of alienated mining lands when the owners default.

## Resource Access

Co-ordination and consultation were provided for the construction and maintenance of forest access roads, and assistance is given on an ongoing basis to the Northern Ontario Resource Transportation Committee secretariat.

A total of 8,919 km (5,542 miles) of forest access, Ministry service, public transport and agreement forest roads were maintained.

The Ministry shared, by agreement, the cost involved in maintaining 698 km (434 miles) of private forest roads constructed by industry.

The Ministry of Northern Affairs provided funding for construction and reconstruction of roads in southern Ontario, resulting in the completion of 73 miles.

The Ministry of Northern Affairs provided funding for the construction and reconstruction of the following in support of Ministry programs in northern Ontario.

1. Normal Program plus Regional Priority Budget  
Forest access roads and bridges ..... 223 miles
2. Northern Ontario Resources Transportation Committee
  - (a) Forest access roads, bridges and other projects ..... 84 miles
  - (b) Winter roads (Round Lake) ..... 35 miles
  - (c) Snowmobile trails ..... 100 miles
3. Forest Management Subsidiary Agreement  
(shared with Federal Government)  
Bridges ..... 1

# Conservation Authorities and Water Management Branch

The newly-created Conservation Authorities and Water Management Branch combines the Former Engineering Services and Conservation Authorities Branches. The organizational change allows a strong water management thrust within the Conservation Authorities Program to be linked with water management responsibilities of the Ministry and concentrates staff forces towards comprehensive water management.

The Branch is responsible for water policy and planning systems development for Conservation Authorities and areas not covered by Conservation Authorities. In addition, funding assistance, management and planning assistance are provided to Conservation Authorities as well as the provision of technical duties in the management of planning of Ontario's public waters.

## Conservation Authorities

The 39 Conservation Authorities cover most of Ontario south of the Precambrian Shield as well as sections of northern Ontario around North Bay, Sault Ste. Marie, Sudbury, Timmins and Thunder Bay. They undertake a wide variety of programs to further the conservation, restoration, development and management of the renewable natural resources of their watersheds.

A Conservation Authority is formed as a result of a resolution from two or more municipal councils that petition the Minister of Natural Resources to convene a meeting for that purpose. If the vote of the municipal representatives is favorable, the Authority is established by an Order-in-Council. In general, the Authority's boundaries are then defined on a watershed basis. They may include a single watershed, such as the Grand River system, or a number of smaller and adjacent watersheds, such as the Cataraqui Region.

The Kawartha Region Conservation Authority was recently formed through the above-captioned process and the Ministry is presently working with the newly-created Conservation Authority to develop a long-term program.

The Conservation Authorities Act ensures a provincial-municipal arrangement. The membership of each Authority includes representatives of all municipalities situated wholly or partially within the watershed, and up to three members appointed by the Province. Consequently, the initiative and sense of responsibility of the local communities are combined with the technical and financial resources of the Province to protect and develop the watersheds of Ontario.

Conservation Authorities place particular emphasis on water and related land management. They are also involved with auxiliary programs oriented to lands use, forestry, fish and wildlife, outdoor recreation and conservation education.

All programs undertaken by the Authorities must have the approval of the Minister of Natural Resources. Each program involves a wide variety of resource management projects that receive financial assistance. Provincial grants are provided through the branch. In some water management projects, the Federal Government may also participate.

The Authority raises its share of the funding by levying its member municipalities and by receiving aid from other sources.

At present 20 Authorities employ a general manager or director of operations to supervise their programs under the direction of a chairman. Resources managers are supplied by the Province in 19 Authorities, including three instances where the services of a manager are shared by two Authorities.

Conservation Authorities relate to the Ministry's field organization at the regional level. Four regions have program supervisors to assist the Authorities in planning and implementing their resource management programs.

The grants to the Conservation Authorities totalled \$30,158,072.14, during the fiscal year.

## Administration

The Branch moved forward with a number of policies and programs. The Report of the Working Group on the Mandate and Role of Conservation Authorities was reviewed in depth by municipal organizations and it is anticipated they will solicit government approval of the policy. A new manual of Policy and Procedures for Conservation Authorities has been created and will be instituted shortly.

This year a comprehensive statement on flood plain criteria relating to Conservation Authorities and the Ministry was put forward and received government approval. The policy statement enables each public agency and private individual to clearly understand provincial standards regarding flood susceptibility and flood risk.

Watershed planning studies are presently underway in most Conservation Authorities, with studies in the Grand River and Metropolitan Toronto and Region Conservation Authorities expected to be completed soon.

Conservation Authorities have increased their emphasis on land management programs related to PLUARG (Pollution from Land-Use Activities Reference Group) concerns. For example, the Upper Thames River C.A. recently developed private and public land use demonstration programs in the predominantly agricultural Stratford-Avon watershed.

The environmental strategy for the Lake Simcoe-Couchiching Basin demonstrated the role of the South Lake Simcoe Conservation Authority in inter-agency environmental management. An implementation plan is being prepared.

The biennial tour of Conservation Authorities involved the staff and members of the Authorities in Southwestern Region. The tour provided a perspective on activities in the long Point Region, Upper Thames River and Grand River Conservation

## Water and Related Land Management

Programs within Water and Related Land Management Section relate to water management and flood control, and include projects such as flood plain mapping, environmental assessment, dams, channel improvements, erosion control structures and water quality monitoring. Grants to the Authorities under these programs totalled \$20,466,352.85 during the year.

A total of 1430 ha (3576 acres) of land was purchased by the Authorities in 1978 for water and related land management, bringing the total land holdings to 85,342 ha (213,357 acres).

Twenty-four of the Authorities protect the residents of some 215 municipalities through the implementation of approved flood plain regulations. Water quality is monitored by 320 stations within the Authorities.

Conservation Authorities assisted private land owners by carrying out reforestation programs on 570 properties, streambank and gully erosion programs on 39 properties, conservation plans on 17 properties, and other private lands assistance on 234 properties.

## Program Highlights

The Lakehead Region C.A. has received approval for the Neebing-McIntyre Flood Control Measures Project which will provide flood relief to the city of Thunder Bay.

The Nickel District C.A. completed construction on the Nickeldale Dam and Reservoir in 1979. Nickeldale Dam is

fourth in a series of four dams that were recommended in the Conservation Authority Conservation Report.

Construction of the W. Darcy McKeough Diversion dam and channel, being undertaken by the St. Clair Region C.A., saw the completion of contracts 1 & 2 in 1979. Contracts 3 & 4 should be finished by January, 1981, with the final completion anticipated in 1982.

The Grand River C.A. proceeded with a number of flood control works including a continuation of the Caledonia Dam, and the undertaking of major flood control studies in Brantford, channel improvement in Cambridge, and bank stabilization in New Hamburg.

Construction on the Bennett-West Davignon Diversion project by the Sault Ste. Marie Region C.A. was completed in August, 1979.

The Credit Valley C.A. undertook the replacement of a railway culvert on Sheridan Creek to relieve flooding problems in Mississauga.

A large water and land management project was undertaken by the Metro Toronto and Region C.A. in 1979. The study included erosion and bank stabilization projects as well as several flood control projects.

The Otonabee Region C.A. continued a land acquisition project on the floodplain in Peterborough.

The South Lake Simcoe C.A. undertook a large floodplain mapping project under the Canada/Ontario Flood Damage Reduction Program. The Authority also carried out channelization construction work in Newmarket.

The Grand River Basin Study, a co-operative study involving various provincial Ministries and the Grand River C.A., is progressing on schedule. The study will be completed in the fall of 1980.

The Grand River C.A.'s Environmental Assessment of Water Control Structures in the Grand River Basin was completed and submitted to the Government for review.

The Raisin Region C.A. continued construction of a drainage channel and a stormwater retention pond to alleviate flooding on the Fly Creek Channel in Cornwall.

In 1979 the Maitland Valley C.A. received approval to undertake a thermography study. The five-year program will employ remote sensing to investigate 17 selected areas.

The Upper Thames River C.A. completed one-third of its environmental assessment of the Glengowan Dam & Reservoir in 1980 with completion anticipated in 1981. The Authority's private land extension program was enhanced through additions in funding and manpower to meet the increased demand from private landowners.

In March, 1979, several dykes along the lower Thames River were breached, resulting in \$2 million damage. The subsequent "Report of the Dower Township Flood Control Committee" recommended, among other things, the preparation of a comprehensive ice management plan for the Thames River. In 1979 approval was given to the Lower Thames Valley C.A. to undertake a \$20,000 study to prepare an assessment of alternatives for the prediction, control and prevention of flooding due to ice jams on the lower Thames River.

The Lower Thames Valley C.A. began phase 5 of the Indian McGregor Creek Channel Improvement Program in 1979 to relieve flooding in the South Chatham area, completion is expected in 1980.

Following severe flooding in Field and on the shores of Lake Nipissing in 1979, the Province and the Federal Government authorized a study of the Sturgeon River/Lake Nipissing/French River system. The study will identify flooding problems and develop alternatives for coping with the problems. It is expected to be completed in December, 1980.

## Conservation and Recreation Land Management

This program includes projects related to land acquisition for conservations areas, development and landscape protection, reforestation and woodlot management, outdoor recreation, information and outdoor education, fish and wildlife inventories, and pollution abatement. Grants to Authorities under this program totalled \$4,934,736.46 of which \$1,530,000.00 went towards the Lake Ontario Waterfront Projects.

A total of 823 ha (2,057 acres) of property was purchased by the Authorities in 1978 for conservation and recreation land management, bringing the total land holdings to 23,320 ha (58,016 acres). Of this total, 8390 ha (20,711 acres) are set aside as recreation areas. During the year the recreation areas were used by an estimated 3,808,476 people for day use and 915,038 for overnight use. Conservation Authorities provided 2,407 serviced and 5,114 unserviced campsites.

Trails operated in the Conservation areas in 1978 comprised 896 km (556 mi.) hiking trails, 123 km (76 mi.) equestrian trails, 687 km (427 mi.), cross-country skiing and snowshoeing trails, and 485 km (301 mi.) motorized vehicle trails.

### Program Highlights

The Lakehead Region C.A. was given approval to develop a plan for the Silver Harbour Conservation Area to provide public access to Lake Superior.

The Halton Region and Hamilton Region Authorities have continued to acquire land along the Burlington Beach strip.

The Crowe Valley C.A. acquired a new administrative building in Marmora, overlooking in Marmora Dam.

Approval for the Backus Conservation Area Master Plan was received by the Long Point Region Conservation Area. The future development will include campground expansion, construction of trails, wildlife and woodlot management, and a small amount of land acquisition.

The Sauble Valley C.A. received approval for the Glen Management Conservation Area. Future development includes trail expansion, wildlife habitat improvement, reforestation, streambank stabilization, and some land acquisition.

The Saugeen Valley C.A. received approval for the Saugeen Bluffs Conservation Area Master Plan in 1980. The area is currently popular for day use and camping, as well as the Authority's maple syrup demonstrations. New facilities will include washrooms, boat launch and campground servicing.

### Youth Programs

Under the Experience '79 Program the 1,332 students hired by the Branch and the Conservation Authorities gained valuable insight into resources management by undertaking projects such as the development of nature trails in conservation areas, restorations of historical sites, removal of debris from water courses, construction of riverbank retaining walls, and compilation of wildlife inventories. Total grants under this program were \$1,759,500.00.

The 1979 Junior Conservationist Award Program provided employment for 35 participants and six leaders. The program, which is administrated by the Branch, is a combined working and learning experience in conservation and resource management. Its purpose is to stimulate, through an active summer program, a continuing interest in the wise management of our natural environment. Host Conservation Authorities in 1979 included Halton Region, Metro Toronto and Region, Mattagami Region, Saugeen Valley, and Maitland Valley. Total cost of the program was \$69,549.

# Public Waters

## Pre-Engineering and Design

Projects included design of bridges over the Namakan, Little Pic and Eagle Head Rivers and liaison with the engineering consultant for a suspension bridge over Ouimet Canyon.

Investigations were carried out and designs were prepared for Pickle Lake, L'Amable Lake and Pesu Lake dams, boat docks at Sioux Lookout, a spawning channel at Westport, a fish pass at the Julian Reed Dam, and for flow measurement weirs at a number of fish culture stations.

Erosion control works were designed for Earl Rowe and Sibbald Point Provincial Parks.

A flood line mapping study was completed on Black River, Huronia District, and a preliminary Muskoka River Watershed Study was carried out.

## Construction

Projects included reconstruction of dams at Sphere Lake, Fox Lake, Kearney, Farr Creek and Graham Lake. Erosion control works were built at Sibbald Point and Earl Rowe Provincial Parks.

A dam on the Mattawa River, formerly owned by Mattawa Electric Light and Power Company, was rebuilt; the hydro-electric generation capability was retained and the works will again be used for generating electricity.

A major fish pass was built on the Beaver River at Thornbury. The pass is of the Borlund lock type, the only one of its kind in Canada; this design was chosen because fish have to be lifted 24 feet over the mill dam and there is limited space between the dam and a bridge on Highway 26.

A new water distribution system was installed at Skelton Lake Fish Hatchery.

Reconstruction of Maskinonge Lake Dam for Ontario Hydro was completed, and civil works were installed at Wasdell Falls for installation of an experimental turbine, again for Ontario Hydro.

## Maintenance

Major maintenance was carried out on docks at Sault Ste. Marie, South Baymouth and Parry Sound, on bridges at Net and Thieving Bear Creeks, and at dams on Gooseneck, Sideburn and Ranger Lakes.

The retaining wall at Chapleau Airbase was partially reconstructed.

Dams were removed at Endikai and Rawhide Lakes.

In addition, minor repairs and renovations were made at approximately 70 other Ministry docks and dams as part of the normal Ministry maintenance program.

## Water Management

The Branch provides for the operation of Ministry-owned dams for recreation, fish and wildlife protection, flood and erosion control, and Ministry service purposes.

The Branch provides for the regulation of construction, operation and maintenance of private dams, diversions, channelization, water crossing and other water control structures through administration of The Lakes and Rivers Improvement Act. The following activities took place in the regulations of private water control structures under this Act in 1979:

Location Approvals .....	258
Plans and Specifications Approvals .....	144
Refusals of Applications for Approval .....	9
Inquiries Held Under the Act .....	1
Minister's Orders Issued .....	3
Investigations of Water Regulation Problems .....	963

Great Lakes water levels and flows are continuously monitored through reports and information obtained from the International Lake Superior Board of Control and the International St. Lawrence River Board of Control.

The Branch represents provincial interests on the Lake of the Woods Control Board in the regulation of Lake of the Woods and Lac Seul, and on the Ottawa River Regulation Planning Committee which is developing recommendations for regulation of the Ottawa River, an operational application of a forecast model, development of a flood warning system, a liaison mechanism with St. Lawrence River regulation and an Ottawa River Operating Committee.

## Lake of the Woods Control Board

This Board was created by concurrent federal, Manitoba and Ontario legislation in accordance with the terms of the Lake of the Woods Convention and Protocol, a treaty between Canada and the United States.

The Board is charged by the treaty with responsibility for regulating Lake of the Woods "with the object of securing to the inhabitants of Canada and the United States the most advantageous use of the waters thereof" and "to ensure the highest continuous uniform discharge of water from the lake" while maintaining the lake level within prescribed elevations.

It is further charged, by the legislation, with responsibility for regulating the level of Lac Seul and of the flows in the Winnipeg and English Rivers between the outlet of the lakes and the confluence of the rivers.

The Board is composed of four members, two representing Ontario, one representing Canada, and one representing Manitoba; for each member, there is an alternate. By the terms of the treaty and the legislation, all must be engineers.

## Ottawa River Regulation Planning Committee

This is a joint federal-Quebec-Ontario committee established to recommend criteria for regulation of the Ottawa River, taking into account hydro-electric power production, flood protection, low water problems, and water quality needs and recreation; and to recommend on development of a flood warning system, on an effective liaison mechanism with the International St. Lawrence River Board of Control, and on the nature and funding of a continuing Ottawa River operating committee.

Work began in 1977 and a final report will be issued late in 1980.

Study participants include personnel from Environment, Transport and Public Works, Canada; Environment and Hydro, Quebec; and Hydro and Ministry of Natural Resources, Ontario.

Work and costs have been shared by the participating agencies with each agency being responsible for the salaries and expenses of its employees. Purchased services have been limited to a systems design consultants and computer rental. Costs for purchased services have been shared equally between the three jurisdictions.

## Great Lakes Shore Management

The Branch aids the development of shore management policies and provides technical expertise for the alleviation of flood and erosion damage along Great Lakes shores. Current efforts are aimed at implementing recommendations presented in the Canada-Ontario Great Lakes Shore Damage Survey Technical Report, released in 1975. The main purpose of the survey was to compile data detailing the extent of 1972-73 damages, provide information on shore characteristics, and make shore management recommendations.

A Canada/Ontario Great Lakes Shore Management Guide has been compiled in response to the Technical Report recommendation that methods be developed to evaluate shore management alternatives. The guide is being reviewed by a

number of municipalities, conservation authorities, universities, and federal and provincial government agencies before public release.

Monitoring of shore processes has been undertaken, as recommended by the Technical Report, to ensure maintenance of current information on shore characteristics. Ground profiles are taken annually and after major storms at about 165 permanent erosion stations established on the erodible portion of the Great Lakes.

As part of an ongoing Great Lakes public awareness program, newspaper ads were placed in 82 southern Ontario newspapers circulating to shore residents, advising of the availability of various publications and information sources dealing with Great Lakes flooding and erosion problems.

The Branch is involved in References given to the International Joint Commission by the Canadian and United States governments through participation on the Working Committee of the International Diversions and Consumptive Uses Study Board, and on the Working Committee and Coastal Zone Sub-committee of the International Lake Erie Regulation Study Board.

## Flood Emergency Response

As "lead ministry" the Ministry maintains a program to co-ordinate the response of the Government of Ontario to flood emergencies declared by the Minister. The Branch administers this program on behalf of the Provincial Co-ordinator.

A number of flooding and potential flooding situations were monitored by district managers during the year, and three of them required a declaration of flood emergency by the Minister. The emergencies were experienced by the hamlet of Field, Springer Township and communities along the shoreline of Lake Nipissing.

# Office of Indian Resource Policy

The Office of Indian Resource Policy was established in 1976 as a separate entity with the responsibility for researching and responding to Indian land claims and other Indian land problems, co-ordinating all of the Ministry's involvement in matters relating to Indian people, and providing a consultant type of role within the Ministry on all such matters.

It performs a Central Registry type of function for all land deals with Indian people by any Ontario ministry and Ontario Hydro. It is responsible for keeping the Ministry (and Government) aware of the possible extent of future land claims and their significance.

The Office develops Ministry positions on these claims and prepares recommendations to Cabinet. It undertakes research for these in consultation with other ministries and with the Federal Government and Indian bands and their associations. On the direction of Cabinet, it negotiates the settlement of valid land claims with the Indian people involved.

The Office also develops and co-ordinates Ministry policy that has a significant impact on Indian people.

# Aviation and Fire Management Centre

## Fire Management

A total of 1,564 forest fires burned over 63,715 ha (157,444 acres) in Ontario during the 1979 fire season. The totals included 28 fires which occurred within the fire district but outside the area of intensive protection; these fires burned over 11,227.4 ha (27,743.6 acres). The totals did not include 20 fires which occurred outside the fire district and burned over 3,725.4 ha (9,205.7 acres).

Unlike the years 1974 to 1977 when serious fire problems developed, and unlike 1978 which was considered below normal activity, 1979 was close to being an average year — 1,350 fires and 60,703 ha (150,000 acres).

Because the weather in the spring was for the most part cool and wet, which delayed normal "green-up", the result was a rash of rather short-lived but high-acreage fires around the beginning of the summer. Provincial manpower and equipment resources were mobilized into northwestern and north central Ontario as the number of fires and intensity exceeded the suppression capability of the resident forces. A high pressure system became entrenched over northern Ontario and maintained the fire hazard conditions throughout most of the province.

This weather pattern broke in early July, at which time the incoming frontal system started several lightning fires. Fortunately, relative humidities were generally high and the prevailing winds were light during this period. None of the fires which occurred became overly serious.

Aircraft utilization of the province's Tracker fleet, now existing of four operational aircraft, was limited in 1979. The decision was made to dispose of the aircraft. A serious look was taken to dispose of all aerial retardant plus retardant storage, mixing and loading equipment and facilities. Throughout the fire season, arrangements were made with other provinces for the receipt or loan of heavy water-bombing resources. A shortage of helicopter availability was noticeable.

## Fire Prevention

Emphasis was on evaluating existing material and introducing new items directed to specific groups. The campfire problem was approached by producing a poster with the caption "Some Campfire" and a plastic weather-proof map with a campfire message on the side.

A series of 30 and 60-second radio messages were prepared and distributed to stations throughout the province.

Posters, T-shirt decals and buttons with an animal theme, with the caption "Our Friends Don't Play With Fire," were added to the school program. The button/decal format was also produced for older groups. Blueberry boxes were distributed to the public in the Northeastern Region.

A modular display kit with clip-in panels was made available for community programs. A library of panels illustrating fire management programs was assembled to enhance local programs.

A 16 mm film, entitled "Some Campfire," was produced to illustrate the many aspects of fire management in an entertaining format.

A general fire information booklet was updated to be reprinted, and audio-visual programs were being produced.

## Training

Two fire-safety courses were provided to non-fire staff to train them to act as fire safety officers. Two fire-accounting courses were held to upgrade accounting skills on campaign fires and multiple occurrence situations.

One course was given in basic fire suppression (Fire Course I). This trains initial-attack fire bosses and sector bosses.

A fire-weather course was held to provide background information to assist staff to understand rudimentary weather and to apply same to a fire situation. Fire staff and plans and records officers attended.

The Ministry shared a joint Ontario-Manitoba Instructor Training Course which was held in Manitoba.

A state-of-the-art seminar was held for some 150 fire control and management staff. Theme rooms were established for such areas as communications, weather, equipment, computers and remote sensing.

## Development Work

During 1979 a total of 14 projects were undertaken in the area of equipment development and evaluation. Projects of particular interest were modifications on the Ontario aerial ignition device, development of a portable kitchen and water system for use on large fires, method for drying hose from an outside hose drying tower under inclement weather conditions, and evaluation of synthetic hose.

Several other projects were undertaken. These included work with the automatic lightning direction-finder and locator, Landsat satellite imagery, computer-based decision-making aids, and co-operative projects with the federal government in the areas of fire behavior, fire ecology and prescribed burning research.

## Prescribed Burning

Ontario suffered its first loss of life associated with ground fire operations. Seven youths, five males and two females, died while participating in the initial ignition of a 250-acre prescribed burn in an area north of Geraldton.

# Administrative Services Branch

## Services

The responsibilities of the Services Section manager include the Ministry's customer service program.

The co-ordinator of hospitality is responsible for arranging Ministry functions, conferences and air transportation.

### Office Management

The unit is responsible for the following: design, issue and replacement of uniforms; continual updating of the Ministry's listings in telephone directories across the province; issue of identification cards and telephone credit cards to Ministry staff; distribution of government manuals and their revisions as well as the Ministry's policy and procedure directives; the equipment inventory control system and main office equipment inventory control records; the copy centre which provides printing services for main office; the mail room and messenger service; and main office telecommunications.

### Public Service Centre

The Centre is responsible for the sale and distribution of Ministry publications, maps, aerial photographs, and hunting and fishing licences. The maps handled include the Provincial Topographic, Fishing, Territorial, Geological, Forest Stand, Planimetric and Basic Mapping series, the National Topographic series, and the county maps of the Ministry of Transportation and Communications.

A Natural Resources information booth on the main floor of Whitney Block provides information to visitors and handles general inquiries by telephone.

## Supply

### Supply Management

The unit is responsible for co-ordinating Ministry procurement policy and assisting Ministry offices on procurement matters. Duties include the issue and revision of directives of purchasing via Supply Manual; preparation of standard purchase forms and specifications; assistance in preparing contract documents and tendering needs; co-ordination of the Ministry purchasing officer training; and the Federal-Provincial Reciprocal Tax Program for the Ministry.

### Purchasing

The unit is responsible for the purchase of most goods and services for main office. It also purchases some goods and services for a few field offices. The unit acts as the Ministry's liaison with the Ministry of Government Services in the purchase of office furniture and furnishings. It establishes Ministry bulk purchase agreements and standing offers where feasible, and it offers assistance and guidance on the research and development of new sources of supply.

### Central Supply Warehouse

The warehouse provides a warehousing and distribution service for common Ministry items such as forms, publications, maps, uniforms, permits and licences. It is located at 733 King Street West, Toronto, and uses 3580 m<sup>2</sup> (38,500 square feet) of space. It issues a monthly inventory report and assists in the preparation of a semi-annual Forms and Publication Catalogue which is distributed to all Ministry offices. It also provides a small-delivery-van service for daily service between main office and the warehouse, in addition to emergency pick-up service within Metro limits.

## Records and Forms Management

The Records and Forms Management Section is responsible for the application of effective program techniques, as required by the Manual of Administration, and for the provision of technical advice to all sectors of the Ministry.

### Records Management

The unit is responsible for maintaining an accurate inventory of all records, records equipment and microrecording equipment; control over the initiation, maintenance, protection, retention and disposition of all Ministry records; conducting feasibility studies regarding all microrecording systems and submitting all proposals to senior management for approval and to Management board when necessary; conducting training seminars for the Ministry in all aspects of records management; developing Ministry file classification plans; and conducting word processing feasibility studies.

### Forms Management

The unit is responsible for establishing, maintaining and reviewing an inventory of Ministry forms; reviewing and approving all requests for forms printing; improvement in design of necessary forms by adherence to Ministry and government-wide design standards; providing forms analysis and design service to users; providing technical guidance to form originators; and conducting training seminars in forms management and design for Ministry personnel.

### Data Processing

The unit accepts for keying the source documents for the Ministry's production data processing systems; schedules, submits and receives computer runs and sees that reports are distributed to user branches; maintains Ministry magnetic tape library; administers the Ministry's magnetic tapes retained in the library of the Central Computing Branch; maintains sufficient systems documentation to enable a contract programmer to carry out maintenance or minor revisions when requested by user branches; assist user branches in identifying computer problems and suggests means of rectifying problems; and keys data from source documents onto magnetic tape or tab cards in a predetermined format. The cards and tapes are interpreted by the Ministry's computer programs to produce the desired reports.

## Facilities and Fleet

### Facilities

The basic role of the unit is the assessment of the accommodation needs of the field and program groups, the co-ordination of the accommodation services provided by the Ministry of Government Services, and the control of individual projects. This role relates to the provision of new capital and leased facilities, and the upkeep of existing facilities.

The major construction projects completed during the year included the Thunder Bay irrigation system, the Midhurst irrigation system, the Sault Ste. Marie communications shop, the Napanee warehouse, the Nym Lake staff hostel, the Armstrong standby trailer, and the Wawa office portables.

A hangar was acquired at Timmins Airport and a new residence was purchased for the manager of the Hill Lake Hatchery.

Major office renovations were completed for the Assistant

**Deputy Minister of southern Ontario, Policy Co-ordination Secretariat, Parks Branch and Ontario Geological Survey.**

Leasing projects were arranged to provide additional space for the Petroleum Resources Lab in London, Timmins District Office and Cornwall District Office.

## **Fleet and Equipment**

The unit provides a variety of management and operational services for the field and main office fleet which has a stock of 4,000 owned and leased units. A major undertaking during the year was the development of a Fleet Management Information System.

# Personnel Services Branch

## Manpower

In their respective areas of responsibility, all units of Manpower Section are responsible for maintaining through the section supervisor liaison with central agencies such as Management Board Secretariat, Civil Service Commission and for providing the agencies with Ministry views on proposed policies, guidelines and procedures. All units develop and recommend to senior management new or revised internal Ministry policies, guidelines and procedures. The units and their responsibilities are named below.

### Youth Programs

Selection and assignment of applicants for the Ministry's own Junior Ranger and the Government-wide Experience programs. Selection and assignment of students applying for summer jobs in the main office. Dealing with the Youth Secretariat on all matters related to youth programmes including negotiating salary allocations and amounts of supporting costs, Auditing of Junior Ranger camps and their work programs.

### Staffing

Providing main office with direct staffing services for professional, administrative, technical and support staff. Dealing with all "Surplus Staff" issues and the Co-operative Training Program of the Youth Secretariat.

### Training and Development

Providing consultative and direct training and development services for all organizational units of the Ministry by designing, testing and producing a variety of management development courses and by improving and re-designing technical training manuals for a variety of technical courses.

### Manpower Control

Maintaining current records of staff strength, vacancies and "classified structure ceiling" for individual organizational units and the whole Ministry. Producing for the Ministry's senior management and for central agencies regular (weekly, monthly and annual) reports.

### Unclassified Staff

Producing annually Ministry's operational manual for employment of unclassified staff and throughout the year dealing with specific related problems, and providing advice to line managers and to other functional areas of the Ministry and all related matters. Producing monthly reports on the numbers of unclassified staff for central agencies and on demand reporting on numbers by specific categories and types.

## Compensation and Staff Relations

The Compensation and Staff Relations Section has the following responsibilities:

Classification of positions under delegated authority, and the recommendation of classification of positions not under delegated authority to Civil Service Commission;

Advising managers on organization, job design, classification and pay-related matters;

Maintaining control of positions and classification validity, developing classification standards, modifying existing classification standards, recommending standards changes and improvements to Civil Service Commission, and reviewing and auditing classification decisions of regional personnel officers;

Providing input to the Civil Service Commission on pay and classification policies, procedures, needs and problems;

Representing Ministry at salary negotiations, making special case submissions for dealing with salary problems, developing and recommending ministry wage and salary administration guidelines, and interpreting pay administration procedures;

Job analysis and job evaluation training and conducting personnel operational audits;

Dealing with matters related to collective bargaining (e.g. local, Ministry and service-wide negotiations) with the bargaining unit, and representing Ministry at central agency negotiations;

Providing input to Civil Service Commission on staff relations, working conditions and benefits policies, needs and problems;

Advising managers on employee discipline and grievances and defending Ministry position on employee grievances before various arbitration boards;

Interpreting and explaining collective agreements and arranging medical and mandatory referrals;

Administering Quarter Century Club, Home Ownership Relocation Plan, employee and pre-retirement counselling and liaison with OPSEU; and

Staff Relations training and management-bargaining unit status determination.

## Personnel Records

Personnel Records Section has the following duties:

Documentation of personnel records; leaves of absence recommendations; processing nomination to staff; transfers; separations; group insurance applications and changes; dental plan; merit increases; accelerated increases; salary revisions; employee indebtedness; estates; maintaining personnel files for all regular and probationary staff; maintaining classification files; and providing statistical information at the request of other branches of the Ministry.

## Senior Administration Staff

March 31, 1980

### Deputy Minister

Dr. J.K. Reynolds.

### Assistant Deputy Ministers

W.T. Foster, Southern Ontario  
J.W. Keenan, Administration  
L. Ringham, Northern Ontario.

### Regional Directors

R.A. Baxter, North Central (Thunder Bay)  
W.G. Cleaveley, Northeastern (Sudbury)  
R.M. Dixon, Central (Richmond Hill)  
G.P. Elliott, Northern (Cochrane)  
K.K. Irizawa, Algonquin (Huntsville)  
G.A. McCormack, Northwestern (Kenora)  
J.R. Oatway, Eastern (Kemptville)  
N.D. Patrick, Southwestern (London).

### Executive Co-ordinators

H.A. Clarke, Lands and Waters Group  
D.P. Drysdale, Program Management Evaluation  
L.H. Eckel, Outdoor Recreation Group  
G.A. Jewett, Mineral Resources Group  
A.H. Peacock, Forest Resources Group  
G.D. Spry, Finance, Planning and Evaluation Group.

## Directors

E.F. Anderson, Lands Management Branch  
 R.J. Burgar, Conservation Authorities and Water Management Branch  
 R.G. Code, Surveys and Mapping Branch  
 M.W. Cox, Budget and Program Analysis Branch  
 H.B. Farrant, Human Resources Planning  
 M.B. Fordyce, (Mrs.) Policy Co-ordination Secretariat  
 W.K. Fullerton, Forest Resources Branch  
 A.C. Goddard, Financial Services Branch  
 G.A. Hamilton, The Leslie M. Frost Natural Resources Centre  
 A. Jackel, (Acting) Personnel Services Branch  
 K.H. Loftus, Fisheries Branch  
 E. Markus, Timber Sales Branch  
 Dr. T.P. Mohide, Mineral Resources Branch  
 F. Moritsugu, Information Services Branch  
 Dr. E.G. Pye, Ontario Geological Survey  
 J.A. Queen, Administrative Services Branch  
 R.A. Riley, Land Use Co-ordination Branch  
 J.D. Roseborough, Wildlife Branch  
 W.L. Sleeman, Aviation and Fire Management Centre (Sault Ste. Marie)  
 R.J. Vrancart, Parks and Recreational Areas Branch  
 A.A. Ward, Internal Audit Services Branch  
 E.G. Wilson, Office of Indian Resource Policy  
 D.M. Wood, Management Planning and Analysis.

## Head

Dr. D. Burger, Ontario Forest Research Centre (Maple).

## District Managers

W.D. Adlam, Ottawa District  
 E.N. Arbuckle, Espanola District  
 J.R. Bailey, Lanark District  
 R.G. Bailey, Napanee District  
 M.P. Barker, Bancroft District  
 W.R. Catton, Cambridge District  
 J.K. Cleaveley, Fort Frances District  
 P.R. Davidson, Aylmer District  
 J.E. Dickenson, Niagara District  
 C. Dionne, Gogama District  
 T.E. Dodds, Ignace District  
 I.B. Earl, Maple District  
 R.Elliott, Chapleau District  
 C.E. Emblin, Hearst District  
 H.P. Endress, Dryden District  
 E.W. Everley, Red Lake District  
 J.F. Goodman, Sioux Lookout District  
 C.R. Gray, Lindsay District  
 L.J. Haas, Pembroke District  
 D.L. Hagar, Blind River District  
 J.E. Hamilton, Kirkland Lake District  
 A.M. Harjula, Atikokan District  
 G.O. Koistinen, Nipigon District  
 J.H. Lever, Bracebridge District  
 R.G. Lightheart, Kapuskasing District  
 W.J. Lovering, Parry Sound District  
 W.D. Mansell, Huronia District  
 R.B. McGee, Temagami District  
 D.B. McGregor, Kenora District  
 D.E. McHale, Thunder Bay District  
 M.F. McKenzie, Simcoe District  
 T.J. Millard, Algonquin Park District  
 J.R. Morin, Cornwall District  
 A.F. Papineau, Timmins District  
 J.D. Parker, Chatham District  
 N. Richards, Wingham District  
 E. Rogers, North Bay District

J.H. Sellers, Sault Ste. Marie District  
 J.A. Simpson, Sudbury District  
 A.J. Stewart, Moosonee District  
 W.J. Straight, Wawa District  
 P.A. Strassburger, Terrace Bay District  
 R.W. Tippett, Owen Sound District  
 R.H. Trotter, Brockville District  
 W. Vonk, Tweed District  
 J.D. Walker, Geraldton District  
 D.D. White, Minden District  
 G.A. Wright, Cochrane District.

## Total Staff

March 31, 1980	Regular	Probationary	Unclassified	Total
Main Office .....	848	69	278	1,195
Field Offices .....	3,240	272	1,660	5,172
Total .....	4,088	341	1,938	6,367
Total Complement of Positions .....				4,541
Regular and Probationary Staff .....				4,429
New Employees Hired, 1979-80 .....				316

## Professional Staff

March 31, 1980	1979-80
Biologists .....	145
Economists .....	7
Engineers .....	9
Foresters .....	288
Geologists .....	53
Park Planners .....	24
Scientists .....	47
Miscellaneous .....	48
Total .....	621
Resource Technicians .....	1,648
Licensed Scalers .....	1,176

## Staff Turnover

1979-80
Deceased .....
Transferred .....
Released .....
Resigned .....
Dismissed .....
Retired .....
Total .....

The ratio of separations to total of regular and probationary staff at March 31, 1980, was 7.8%.

## Safety

Safety Program Development Section continued to be involved with Ministry employee safety programs and the safety of the general public in provincial parks and other Crown lands; training employees in first aid; vehicle driver improvement programs; fire safety procedures; water safety and supervisory training in accident control and job safety planning, etc; and inspection of work areas, equipment and vehicles. The following numbers of employees were trained as noted.

Accident Investigation .....	80
First Aid Courses .....	508
Defensive Driving Courses .....	204
Junior Ranger Safety Training Courses .....	18
Axe and Chainsaw Courses .....	41
Junior Ranger Foreman Courses .....	10
Snowmobile Training Courses .....	7
Inspections (Buildings, Camps, Nurseries, etc.) .....	347

# Legal Services Branch

During the fiscal year commencing with April 1, 1979, and ending with March 31, 1980, amendments were made to two statutes administered by this Ministry. Amendments were made to The Crown Timber Act (by Statutes of Ontario, 1979, Chapter 92) and to The Trees Act (by Statutes of Ontario, 1979, Chapter 51).

The Legal Services Branch prepared and processed 66 regulations made under the authority of acts administered by the Ministry and 437 Orders-in-Council.

Three hundred and sixty agreements were processed through the Branch.

# Information Services Branch

The radio series, *Ontario Outdoors*, won first prize in the radio program category of the international competition sponsored by the (North American) Association for Conservation Information for the 1978 year. The series is used repeatedly by 58 Ontario stations and well known to listeners for the conservation messages voiced by Ministry personnel and the "tall tales" of the Branch's contract producer. Since its beginning in 1971, the series has given Ontario radio stations a 27-minute program every two months.

In the same competition, the Branch-produced film, *Polar Bear Provincial Park*, which had won two previous North American awards, took third place in the motion picture category.

## Exhibits

Two new systems added persuasive display capabilities to the Ministry's presentations during the year. The first was a portable field exhibit prepared for the public meetings held throughout the Province last fall and winter in connection with the moose management program. Main office and regions were all supplied with a freestanding 12-foot system which included a permanent Ministry logo, lights, carrying case and a trolley for transportation. The moose management display can be replaced by local displays or other packages to be supplied by the Branch in the coming year.

A complete communications package was produced for Mineral Resources Group to allow the Group to tell about itself and the importance of mining in quickly understandable words and graphics. The presentation combined audio-visual, publication and exhibit. It was aimed primarily at other staff, both field and main office, but is also suitable for other agencies and the general public.

"Discover Ontario's Crown Lands" was the theme of the Ministry's principal exhibit, staged at the Canadian National Sportsmen's Show in Toronto March 14 to 23. It appeared to stir the interest of many of the 200,000 visitors with the facts (not too well known) about the vast extent of Ontario's lands and waters and the wide scope of the Ministry's management.

The Branch planned and co-ordinated the Ministry exhibits at the Central Canada Exhibition, the Lakehead Exhibition and the International Plowing Match. It also assisted with exhibits and displays for 45 smaller fairs and events where the Ministry presentation was managed by field offices and program branches.

## News and Information

To assist Forest Resources Group, a public information program by the Branch was put into effect during the summer of 1979 to inform the news media and the public in certain areas of northern Ontario of the Ministry's use of pesticide and herbicide spraying.

The program worked through media information meetings, public information meetings, newspaper advertisements, posters and brochures in both English and French languages. The result was a generally improved understanding of the need to spray Crown forests.

During the year the Branch co-ordinated information from main office and field offices and distributed pertinent news material to the media. The total of 102 major news releases included six in the French language. An additional 91 releases announced grants for conservation authority projects and parks assistance programs.

In emergency situations caused by flood or forest fire, the Branch assisted in setting up information networks and delivered up-to-the-minute information to principal news outlets.

Staff support and guest personnel were provided for TV and radio programs throughout the Province.

Material was mailed to 52,467 persons who asked for information on Crown land, natural resources or outdoor recreation.

## A-V and Films

In addition to audio-visual presentations and photographic illustrations for Ministry exhibits, the Branch's principal production was a 17-minute film on the new foot-snare live-trap developed by Wildlife Branch. The film is being shown to audiences across the Province.

During the year the Branch acted on 138 requests for photography services related to Ministry programs and publications. The darkroom produced 3,885 prints.

The motion picture library loaned 1,169 films to Ministry offices and outside groups, 174 of whom were loaned audio-visual equipment. It acquired 18 films, bringing the catalogue total to 363. The theatre was booked for 166 showings.

## Publications

During the year the Ministry released 61 books or large booklets, 79 smaller booklets and nine large folders, usually sold to the general public on a cost-recoverable basis. The publishing list included scientific papers, technical reports and manuals, and numerous leaflets or small folders on Ministry services and installations.

French-language publications included a number of small publications on local features, several annual releases and new items as listed below. The new publications of main office and field offices included the following:

*Algonquin Provincial Park Master Plan—First Five-Year Review*  
*Annual Review of the Activities of the Ontario Centre for Remote Sensing*

*Answering Your Questions About...*

*Canoeing in Ontario*

*Free Group Camping in Provincial Parks*

*Long-Distance Hiking in Ontario*

*Free Use of Ontario Provincial Parks by Senior Citizens*  
*L'avenir du nickel et le droit de la mer*  
*Class Environmental Assistance for...*

*Access Roads to MNR Facilities*

*Dams and Dykes*

*Fishways*

*Solid Waste Disposal*

*Deer Management in Ontario — The Future*  
*Ethics... Code of Ethics and Conduct*

*Factor Substitution and Biased Technical Change in the Canadian Mining Industry (\$5)*

*Forest Management Agreements*

*From Pits to Playgrounds: Aggregate Extraction and Pit Rehabilitation in Toronto (\$3)*

*Fur Management in Ontario*

*The Future of Nickel and the Law of the Sea — Policy Background Paper No. 10 (\$1)*

*Geology and Fossils, Craigleath Area (75¢)*

*Geology and Scenery, Killarney Provincial Park Area (\$2)*

*Geraldton PB-3/79 Board of Review Report, September, 1979*

*Gold Deposits of Ontario, Part II (\$2.50)*

*Guide to Legislation Affecting Mining in Ontario (\$15)*

*In Answer to Your Questions about Aerial Spraying in Northern Ontario*

*Keep It Natural — A Guide for Cottagers*

*Larose Forest*

*La Forêt Larose*

*Land Use Planning*

Manomin Wild Rice Recipes (\$1.50)  
Moose Management in Ontario — Problems and Solutions  
Oil and Gas Exploration, Drilling and Production Summary,  
1977 (\$7.50)  
Ontario Minerals — You Can't Get Along Without Them  
Ontario Mining Statistics, A Preliminary Compendium —  
Policy Background Paper No. 11 (\$5)  
Perspectives pour Kirkland Lake  
Pit and Quarry Rehabilitation—The State of the Art in Ontario  
Platinum Group Metals — Ontario and the World (\$25)  
Primary Wood-Using Industries in Ontario, 1979  
Proceedings of the Second Ontario Conference on Forest  
Regeneration  
Prospects for Kirkland Lake  
Some Peat Moss and Peat Deposits in Selected Areas (\$2)  
Tomorrow Is What You Make It  
Toute ce que vous désirez savoir sur la vaporisation aérienne des  
forêts du Nord de l'Ontario  
Towards the '80s  
Trees and Shrubs for the Rehabilitation of Pits and Quarries (\$2)  
Tweed District Crown Land — A Guide to Its Use  
World Mineral Markets — An Econometric and Simulation  
Analysis (\$15)  
You and the MNR Management System  
Your Career in Resources Management.

# Program Management Evaluation

Program Management Evaluation is a short-term staff function, established in April, 1978, for the following two purposes: to develop mechanisms to improve management performance; and to develop a reliable and comprehensive management information system.

During the fiscal year, activities were concentrated on three areas: operational audits; activity structure and a system of output measures; and the management information system.

Implementation of the operational audit system was completed and responsibility for its ongoing administration transferred to the Management Planning and Analysis Branch.

A comprehensive activity structure, with supporting output measures, was developed to facilitate determination of more precise operating costs, thereby making meaningful performance evaluation possible. Implementation of the new system commenced with the 1980-81 Annual Work Plan process and will be completed in conjunction with the 1981-82 Annual Work Plan.

Work on the Ministry's Management Information System commenced midway through the fiscal year. The objective of this project is to identify and provide precise management information concerning vital activities to the Minister and senior Ministry staff, as well as to managers at all levels, on a regular basis.

# Human Resources Planning

The Human Resources Planning Project grew out of the Management Improvement Program and work on the Human Resources Planning System began January 2, 1979. Development of the system is continuing and various components of the system are being tested in Algonquin Region. The system has five functions or purposes.

*First*, it is a Human Resources Information System to provide management with accurate, current, timely information about people in the Ministry. The information system provides:

- A Skills Inventory which outlines the experience, education and training of people in the Ministry;
- An Inventory of Promotables for planning purposes; and
- A Data Storage and Retrieval System.

*Second*, it is a Career Planning Process to help employees plan their careers, and supervisors and managers fulfill their role as career counsellors.

*Third*, the system is a Training and Development Planning Process to identify the training and development needs of staff and plan for fulfilling those needs.

*Fourth*, it is a Staffing and Selection Process to help fill vacancies and facilitate staffing.

*Finally*, it is a Manpower Planning Process to ensure the Ministry's human resource requirements are identified and plans developed to meet those needs now and in the future.

The appraisal of employee performance by supervisors is an essential part of the system and to this end the Ministry is embarking on an extensive program of training supervisors and managers through a series of one- and two-week courses in Performance Management. This training is being co-ordinated by the Staff Development Unit of Personnel Services Branch. The program will commence in September and is scheduled to finish in early April. By the time the program is completed some 800 or 900 supervisors and managers will have received the training.

Implementation of the Human Resources Planning System is scheduled to begin in April, 1981, and will continue through 1981 and into 1982. The System is an investment by the Ministry in the effective utilisation of the human resources of the Ministry.

# Affirmative Action

The Affirmative Action Program was begun in 1974-75 with the goal of ensuring equal opportunity for women in the Ontario Public Service. Because of the slow rate of improvement in women's occupational status, in 1977-78 a more concrete focus was given to the program so that, while the goal remained the same, the objective was to increase the number of women in all positions and levels where in the past few or no women were employed.

The Women's Co-ordinator is responsible for providing advice and technical assistance to managers at all levels, encouraging women to take advantage of new opportunities, co-ordinating the Ministry's Affirmative Action Plan, and monitoring and evaluating its implementation.

Various methods were used to increase understanding of the objectives and methods of the program, with greater emphasis than previously on statistics showing the slow rate of progress. Speeches by the Women's Co-ordinator to meetings of male and female staff were continued, and written reports on various aspects of the program were widely distributed within the Ministry.

Monitoring and improvement of staffing processes continued. More Selection Boards had members of both sexes, and increasingly the female member had experience in the field concerned. Managers continued to advise the Women's Co-ordinator on each job competition of the criteria on which the applicants were judged.

Personnel Services Branch conducted six courses to instruct managers in the best selection procedures. The Branch also conducted three Performance Management Seminars.

A more formal system is now in place to collect information on hiring, retention, promotion, training, job rotation and job enrichment at the District and Branch level. Data is now available on the number of females employed on unclassified staff in resource management fields.

Efforts continued to increase the numbers of women enrolling in resources management courses, and to assist them to obtain work experience. There was an increase in female Junior Rangers to 788 from 760 in the previous year. Female summer students continued to be hired in all disciplines, and female graduates made up a fair proportion of seasonal unclassified staff.

Increasing upward mobility of present female staff is a priority of the program. The number of special courses increased; three Women into Management courses were held, and 18 in Career Planning and Assertiveness Training. Individual Training and Development plans were made for female employees. Job rotations and other job enrichment activities increased, as did counselling of individual women, particularly on job search techniques.

The Ministry has a network of elected Affirmative Action representatives whose primary role is to encourage female employees to take part in opportunities available. Two three-day conferences of these representatives were held for training, information exchange, and advice on program activities. The elected women form Affirmative Action Committees at the Group and Regional level.

There continued to be a small improvement in the proportion of women in three of the five management classes — Administrative, five additional women; Clerical, two additional women; and Professional, one additional woman.

In the Scientific and Professional Services category, the number of women increased from 35 to 37 during the year but there was no change in percentages as the group increased in size.

In the Technical Services category, a group in which Ministry female staff made a substantial gain the preceding year, the number of women increased from 44 to 48.

# Financial Services Branch

The prime objectives of Financial Services Branch are to provide financial and accounting services to the Ministry, and to ensure that internal financial controls are met. Those financial controls are imposed by legislation and Treasury requirements as well as by principles of sound financial management.

The Branch has decreased its number of units and reduced employee complement by 10 in this fiscal year, making a total staff reduction of 47 since 1974, accomplished by re-organizing responsibilities, making use of computer systems and simplifying procedures. Branch complement currently stands at 82.

## Accounts Payable

Accounts Payable Section pays all Ministry accounts resulting from suppliers, travel expenses and disbursements, provides refunds, and processes financial transactions between ministries. Requisitions for payment are keypunched at electronic data entry stations in field office and main office accounting centres, directly into the accounts payable computer system. Requisitions are checked automatically in Accounts Payable Section for correct name and address and availability of funds. If valid, payment information is then reproduced on magnetic tape and sent to a Treasury computer which prints the required cheques.

This automated system ensures that the majority of accounts throughout the Province are paid within 30 days as recommended by the Ontario Government. This year it processed \$148.5 million of expenditures, which included \$4.9 million of travel claims. There were 188,300 invoices from suppliers, excluding local disbursements.

## Licence Issuing

The Ministry oversees the sale of 45 types of hunting and angling licences, three different export permits, 13 kinds of park permits, and the distribution of two types of commercial fish licences and two types of commercial fur licences. Sales are made at Ministry district offices and by private vendors — local store, gas station or marina owners, for instance. There were 2,981 of these licence issuers at year-end.

The Licence Issuing Section co-ordinates the distribution of licences to issuers, and the collection of accounts, as well as maintaining sales and inventory figures. Control is maintained through an EDP system that distributes inventory reports, issues monthly statements of individual accounts, and automatically produces invoices. District offices play a major role in collecting delinquent accounts.

The Section provides background information about applicants to the Minister of Natural Resources who grants the authority to issue licences.

## IPPEBS

The responsibilities of IPPEBS Section include payment of both classified and unclassified employees and maintenance of the Central Attendance Reporting System (CARS), an automated system for recording attendance and vacation credits.

IPPEBS Section takes its name from the Integrated Payroll, Personnel and Employee Benefits System, a Government-wide electronic data processing (EDP) system that produces regular pay cheques for the Ministry's classified and unclassified employees, records employee benefits and supplies T4 slips for income tax purposes.

This year, the unclassified employee payroll was added to the IPPEB System. Prior to this change, which was implemented for the January 3 pay day, the unclassified payroll

was prepared at the Ministry of Transportation and Communications Centre in Downsview and was geared to distribution on alternate weeks from the classified payroll.

The unclassified payroll ranged from a monthly low of 1,511 to a high of 10,931 in the summer. Seasonal staff included 6,288 students, 2,050 of them being Junior Rangers. Extra firefighters are not included in this payroll. Payroll data for unclassified field office employees is added to the IPPEB System, and attendance data for classified field employees is added to CARS at electronic data entry stations at regional offices, the St. Lawrence Parks Commission and the Aviation and Fire Management Centre. IPPEBS Section continued to provide advice and instruction to these regional centres about operation of the system.

In another change to the system, IPPEBS Section staff added the newly negotiated dental plan to employee benefits records.

## Revenue Accounts and Security Deposits

Revenue Accounts and Security Deposits Section maintains computerized records of all accounts receivable from the sale or lease of Crown land; from timber, mining and pits and quarries operations; and from other licences, taxes and royalties. The Section keeps manual records of security deposits held as collateral for timber licences, park concessions or petroleum resources licences.

## Revenue Receiving

Revenue Receiving Section deposits all revenue received at main office and field offices into the Ontario Government's Consolidated Revenue Fund, and administers the Ministry's accountable advance account.

Revenue Receiving Section brought into operation last November the Ontario Government's first central banking system. The Ministry of Natural Resources was selected by Treasury to develop and test this new system, primarily because of its wide geographic dispersion and decentralized spending pattern. In past years, the Ministry maintained numerous bank accounts in regions and districts to cover local payrolls and advance payments, a practice also followed by other decentralized ministries.

Under the central banking system, the various chequing accounts maintained throughout the Province are funded from one central account at main office for the exact amount of the cheques cleared through the bank. This has resulted in a significant reduction in the level of funding.

## Financial Reporting and Control

Financial Reporting and Control Section includes the following major areas of responsibility.

### Financial Reporting and Claims

Reports on Ministry finances are issued to Government central agencies, to Treasury for the Public Accounts, and to all levels of Ministry management. Some 50 different reports are distributed to management each month. Staff collect and analyze financial data via the computerized Expenditure Accounting System (EAS) which processed almost one million expenditure transactions.

A recent modification made to the EAS allows the Branch to feed data on magnetic tape directly to the Treasury Payment Control system. This has expedited payment of suppliers.

Claims for recoveries (that is, money owed from other ministries, agencies and other levels of Government) are also processed by the Section. These claims are now computer produced as a result of a recent innovation to the EAS.

## Financial Control

Appropriations voted by the Legislature and allotted by management to fund Ministry activities are monitored from this area, which checks all MNR expenditures against budget estimates. Staff also forecast and report Ministry cash-flow requirements to Treasury and keep necessary expenditure records.

## Data Conversion

The Unit enters financial and other pertinent data into the Branch's EDP systems and distributes computer-produced financial reports to management. Data collected from regional offices, the St. Lawrence Parks Commission, the Aviation and Fire Management Centre and main office groups is entered by keypunch operators and transmitted automatically to the Data Conversion Unit, where it is converted to magnetic tape for processing by the Ministry of Government Services' computers.

## Financial Methods

It is the responsibility of Financial Methods Section to provide expertise on the development and operation of both electronic data processing and manual accounting systems. A second major function is to establish Ministry-wide procedures for conducting financial transactions and subsequently provide direction to managers through information bulletins, directives, accounting forms, training manuals and courses.

The Section developed and held six sessions of a training course for field accounting personnel, "Module 3: Revenue, Accounts Receivable and Accountable Advances". A total of 143 persons attended this course. In addition, Fire Accounting teams were trained in two courses held in February and March, 1980.

Fifty-five directives were written and issued either as amendments to existing instructions or as new procedures.

The Central Banking System, which came into existence recently, was a product of this Section. A second major project was a design for computerizing Pits and Quarries Accounting. Implementation of that system is awaiting passage of legislation governing pits and quarries.

In consultation with users, the Section developed improvements to systems for processing expenditure accounting, mining revenue, rentals and timber accounts receivable. A report entitled *Expenditure Accounting System, General Description* was prepared and distributed throughout the Ministry.

# Statement of Budgetary Revenue

For the year ended March 31, 1980

	(\$thousand)	(\$thousand)
<b>MINISTRY ADMINISTRATION PROGRAM</b>		
Reimbursement of Expenditures		
Government of Canada .....	12	
Other .....	4	
Sales and Rentals .....	1,086	
Recovery of Prior Years' Expenditures .....	50	
Other .....	70	
Total for Ministry Administration .....		1,222
<b>LAND MANAGEMENT PROGRAM</b>		
Royalties		
Water power .....	19,280	
Timber area charges .....	5,471	
Mining		
Acreage Tax .....	597	
Fees and licences .....	587	
Reimbursement of Expenditures		
Government of Canada .....	133	
Other .....	165	
Sales and Rentals .....	4,552	
Recovery of Prior Years' Expenditures .....	152	
Total for Land Management .....		30,937
<b>OUTDOOR RECREATION PROGRAM</b>		
Reimbursement of Expenditures — Government of Canada .....	1,603	
Recreational Areas .....	6,692	
Fish and Wildlife .....	13,786	
St. Lawrence Parks Commission .....	3,683	
Recovery of Prior Years' Expenditures .....	137	
Total for Outdoor Recreation .....		25,901
<b>RESOURCE PRODUCTS PROGRAM</b>		
Mineral Management		
Profits tax .....	99,077	
Royalties .....	1,540	
Fees .....	126	
Forfeitures .....	28	
Recovery of Prior Years' Expenditures .....	34	
Forest Management		
Stumpage .....	42,729	
Forest products .....	635	
Stock production .....	236	
Reimbursement of Expenditures —Government of Canada .....	26	
Recovery of Prior Years' Expenditures .....	15	
Other .....	75	
Total for Resource Products .....		144,521
<b>RESOURCE EXPERIENCE PROGRAM</b>		
Frost Centre Facilities .....	245	
Total for Resource Experience .....		245
Total Budgetary Revenue .....		<u>202,826</u>

# Statement of Budgetary Expenditure

For the year ended March 31, 1980

MINISTRY ADMINISTRATION PROGRAM	(\$thousand)	(\$thousand)
Main Office .....	3,144	
Financial Services .....	2,036	
Supply and Office Services .....	3,406	
Personnel Services .....	1,008	
Information Services .....	1,056	
Systems Development Services .....	41	
Legal Services .....	535	
Audit Services .....	562	
Field Administration .....	<u>14,407</u>	
Total for Ministry Administration .....		26,195
<b>LAND MANAGEMENT PROGRAM</b>		
Water Control and Engineering .....	13,684	
Forest Protection .....	17,086	
Air Service .....	4,495	
Extra Fire Fighting .....	8,314	
Resource Access .....	5,075	
Land and Water Classification .....	7,950	
Land, Water and Mineral Title Administration .....	12,295	
Conservation Authorities .....	32,592	
Basic Mapping and Geographic Referencing .....	<u>1,956</u>	
Total for Land Management .....		103,447
<b>OUTDOOR RECREATION PROGRAM</b>		
Recreational Areas .....	30,139	
Fish and Wildlife .....	27,130	
St. Lawrence Parks Commission .....	8,076	
Wasaga Park Community Project .....	<u>7,238</u>	
Total for Outdoor Recreation .....		72,583
<b>RESOURCE PRODUCTS PROGRAM</b>		
Mineral Management .....	9,733	
Forest Management .....	<u>56,770</u>	
Total for Resource Products .....		66,503
<b>RESOURCE EXPERIENCE PROGRAM</b>		
Junior Rangers .....	4,368	
Youth Corps (Experience '79) .....	5,597	
Leslie M. Frost Natural Resources Centre .....	<u>1,106</u>	
Total for Resource Experience .....		11,071
<b>Total Budgetary Expenditure</b> .....		<u>279,799</u>

# Internal Audit Services Branch

The objective of the Branch is to independently review operations of the Ministry and some of its agencies, and provide management with analyses, appraisals and recommendations concerning the activities reviewed. Audits are performed on the following:

All Ministry of Natural Resources offices

Thirty-eight Conservation Authorities

The St. Clair Parkway Commission

The St. Lawrence Parks Commission.

# Budget and Program Analysis Branch

The Budget and Program Analysis Branch has the following responsibilities.

— Co-ordination of the review of the cost effectiveness of existing and proposed Ministry programs, and the provision of guidelines and assistance to program managers to facilitate program evaluation.

— Participation in the formulation of the Ministry's goals, objectives and program structures, and recommendation of changes in existing goals, objectives, program structures and output measures.

— Co-ordination of the program planning and priority setting process in the Ministry, and liaison with central agencies and Management Board of Cabinet and its Secretariat on all matters pertaining to Ministry estimates.

— Co-ordination of the negotiations with other ministries, e.g. Northern Affairs, Treasury & Economics, Culture & Recreation and Energy, concerning project proposals and cash flow for projects funded by these ministries on a cost-recovery basis.

— Compilation of the Ministry's annual budget submission from approved work plans in conformity with guidelines issued by Management Board.

— Issuance of funding allocations and output commitments relating to approved work plans, and exercise of control over unallocated funds.

— Co-ordination of the Ministry's in-year and year-end reviews of expenditures and outputs.

— Conducting reviews of administrative and control systems with a view to improvements in operating efficiencies and financial control, and testing the application of such systems.

# Management Planning and Analysis

A Management Improvement Plan, designed to bring about major changes in the Ministry organization and operation, was announced on November 24, 1977.

The Management Improvement (now Management Planning and Analysis) Office was established on December 1, 1977, with the following objective: "To direct, co-ordinate and monitor the implementation of the Management Improvement Plan for the continuing improvement of management organization, systems and practices through 1980."

Twenty-five major tasks were initially identified for the management improvement function. These tasks included human resources (manpower) planning, program management evaluation, policy and planning, communications services and private sector utilization.

Task forces were set up to deal with the majority of the tasks identified. During 1979-80, the Management Planning and Analysis Office received task force reports on a revised policy and planning system, an expanded communications service and improved methods of dealing with the private sector. As a result of recommendations of a task force on management training and development, the Office initiated a series of

Management Training Seminars for Ministry management staff.

A major objective of the Management Improvement Plan was the reduction of Main Office staff by approximately 200 positions by 1981. Progress toward this objective has been excellent. To date, 155 positions have been identified. In addition, the Ministry has approved the creation of 26 priority positions utilizing funding identified through the Main Office constraint program.

During 1979-80 a major reorganization of the Ministry's Finance and Administration Group was undertaken. The establishment of the new Administration Division was designed to provide an organizational focus for the comptrollership function in the Ministry, a key component of the Management Improvement Plan, and to enhance the provision of a broad range of management services to all levels of the Ministry organization.

Included in the Administration Division is the new Management Planning and Analysis Office which will assume responsibilities for completing the Ministry's Management Improvement Plan, as well as providing an ongoing review of the Ministry's management process and systems.

# Systems Analysis

The objective of the Systems Analysis Unit is to ensure that controls and standards are followed in the design and development of data and word processing systems in the Ministry, and that systems fit into a Ministry-wide systems strategy which takes advantage of electronic data processing technology.

The Unit provides a systems and programming service to all areas of the Ministry. It also administers systems projects implemented by outside consultants and ensures that the SPECTRUM Methodology is used.

The Systems Co-ordinator is on the steering committee for all major systems development projects in the Ministry and involved in the selection of consultants, where necessary, to do the work.

The Unit ensures that Management Board directives for systems development are followed and liaises with Management Board when approvals are required. It also provides technical advice to management personnel and assists them in developing systems plans.

# Mining and Lands Commissioner

The Mining and Lands Commissioner exercises judicial, quasi-judicial and administrative powers and duties under The Beach Protection Act, The Mining Act and The Mining Tax Act, 1972, and regulations made under The Ministry of Natural Resources Act, 1972, assigning powers and duties of the Minister to the Commissioner.

Judgments, orders and reports issued by the tribunal during the fiscal year were as follows:

Orders extending time for performing work or applying and paying for leases .....	1,046
Orders extending time for tagging .....	1
Orders authorizing special renewal of licences .....	74
Miscellaneous judgments, orders and reports .....	<u>60</u>
Total number of orders .....	1,181

Potential revenue from filing extension orders:

8,434 claims .....	Prior to default .....	\$42,170.00
794 claims .....	Relief from forfeiture .....	<u>6,940.00</u>
Total .....		49,110.00

Hearings under The Mining Act were held at Kirkland Lake, Sault Ste. Marie, Thunder Bay, Timmins and Toronto. Two appeals were held at Toronto under The Mining Tax Act, 1972. Appeals under The Conservation Authorities Act were heard at Hamilton, London and Toronto. One inquiry under The Lakes and Rivers Improvement Act was held at Kitchener.

Statutory Authority	Settled or Abandoned	Hearings Held
The Conservation Authorities Act ..	12	11
The Lakes and Rivers Improvement Act .....	4	1
The Mining Act .....	4	6
The Mining Tax Act .....	1	—
The Mining Tax Act, 1972 .....	—	1
Total .....	21	19

During the fiscal year, the fifth volume of the series of legal reports entitled *Mining Commissioner's Cases* was collated, edited and published. This volume contains the more important cases respecting mining and mining tax matters heard and determined by the Mining Commissioner and the Mining and Lands Commissioner from 1969 to 1979; it includes matters transferred to the Supreme Court and decisions of appellate courts.

# Agencies Associated With Ministry of Natural Resources

## Agencies With No Financial Or Administrative Relationship

Board of Examiners of the Association of Ontario Land Surveyors  
Council of the Association of Land Surveyors  
Freshwater Fish Marketing Corporation  
Lake of the Woods Control Board

## Agencies With A Financial Or Administrative Relationship

(\*\*Agencies which prepare an annual report.)

\*\* Algonquin Forestry Authority  
\*\* Canada, Ontario, Rideau, Trent, Severn (CORTS)  
    Advisory Committee  
\*\* Conservation Authorities  
    Crown Timber Boards of Examiners  
    Port Hope Communications Committee (inactive)  
    Game and Fish Hearing Board  
    Geoscience Research Review Committee  
\*\* Niagara Parks Commission  
    Ontario Geographic Names Board  
\*\* Provincial Parks Council  
    Public Agricultural Lands Committee  
    Rabies Advisory Committee  
\*\* St. Clair Parkway Commission  
\*\* St. Lawrence Parks Commission.

## Crown Timber Boards of Examiners

New Board(s) of Examiners are appointed every year in accordance with Section 32 of The Crown Timber Act. Each Board sets written and practical examinations in wood measurement and recommends successful candidates to receive a Scaler's Licence from the Minister. During the past year, two Boards were appointed from Ministry personnel. Following two Licence Scaling Courses held at Pembroke, the Boards examined a total of 158 students and recommended 126 to receive a licence.

## Game and Fish Hearing Board

The Game and Fish Hearing Board is comprised of not more than five members who are appointed by the Lieutenant-Governor in Council. The function of the Board is to conduct a hearing following the refusal of a licence, usually for commercial fishing or trapping. The Board hears the evidence and delivers a written summary along with a recommendation to the Minister. In 1979 the Board dealt with approximately 30 refusals of commercial fishing licences.

## Geoscience Research Review Committee

The Geoscience Research Review Committee was established in April, 1978, to advise the Minister on geoscience research priorities, and the merit and relevance of geoscience research proposals, as submitted to the Geoscience Research Grant Program of the Ontario Geological Survey.

The 11-member committee is comprised of representatives from industry, university and government. It recommends research goals, provides peer review, and recommends the awarding of grants to successful applicants. Under the program during the past year, 27 research grants totalling \$475,567 were awarded to nine Ontario universities.

## Ontario Geographic Names Board

The Ontario Geographic Names Board was established under The Ontario Geographic Names Board Act, proclaimed

April 1, 1969, as the authority over Ontario's geographical names (toponymy). The Board meets quarterly and receives the nomenclature submissions as prepared by its Secretariat (Nomenclature Section) — 2,552 during the past year. These are transmitted to the Minister as recommendations for approval. The approved names are disseminated to client agencies and become official for maps, charts, gazetteers, property descriptions, regulations, and related documents and publications. The Board deals with contentious issues and conflicts of interest affected by name selections.

The seven members of the Board include five persons from the private sector and two civil servants — the Surveyor General of Ontario and the Secretary appointed by the Minister. The present members were appointed September 28, 1977, for a term of three years.

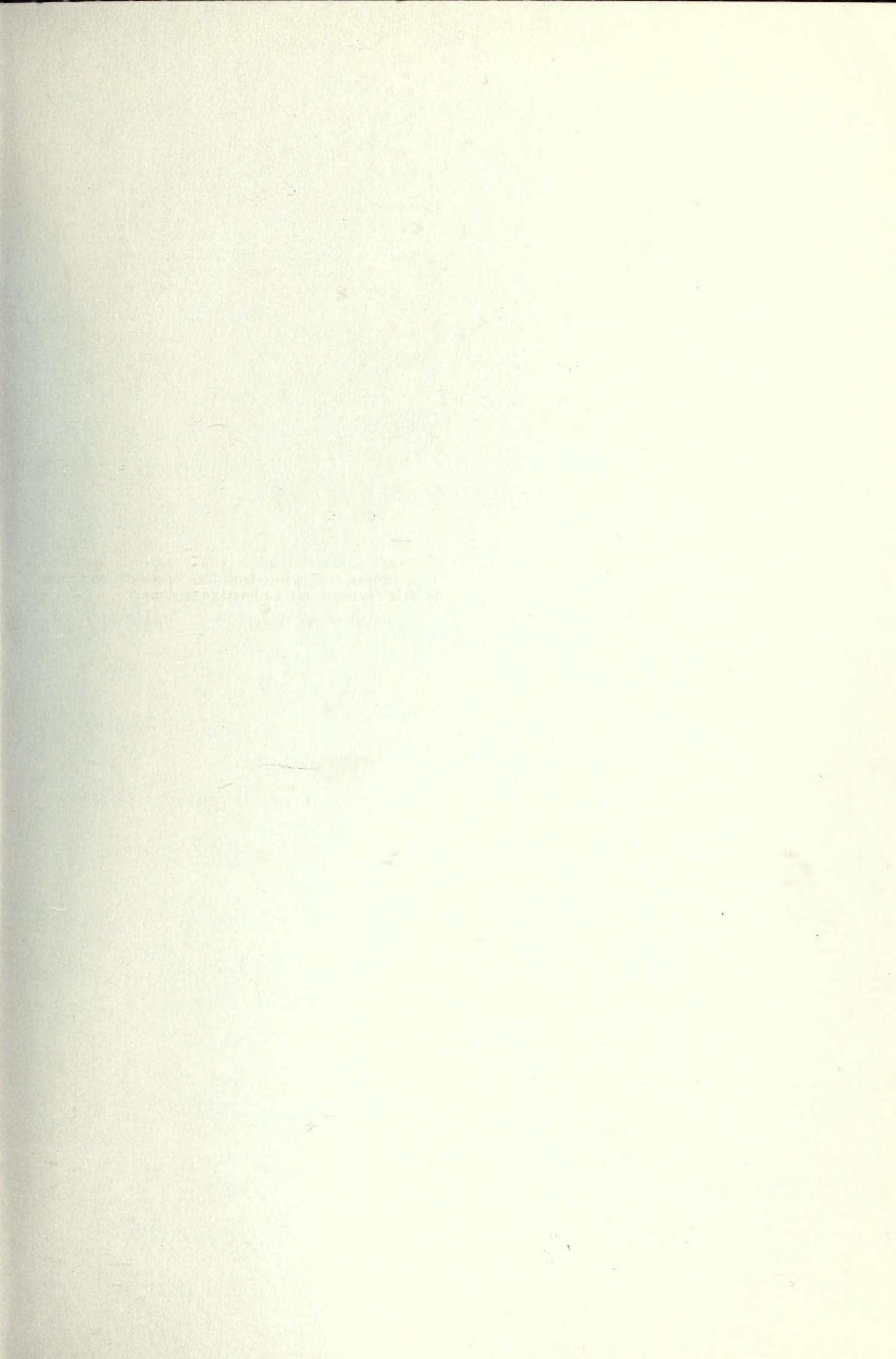
## Public Agricultural Lands Committee

Section 48 of The Public Lands Act provides for the establishment of a Public Agricultural Lands Committee under the Chairmanship of the Supervisor of Public Lands, a Section in Land Management Branch. The Committee includes representatives from main office and field offices and the Ministry of Agriculture and Food. It reviews all applications for public lands required for agricultural purposes. During the past year the Committee dealt with 15 applications, mainly from farmers wishing to enlarge their operations on Crown lands in Northern and Northwestern Regions.

## Rabies Advisory Committee

The Rabies Advisory Committee was established in August, 1979, to advise the Minister on the scientific steps necessary to develop a suitable vaccine against rabies and an effective system for immunizing wildlife populations, especially foxes and skunks which are the main transmitters of rabies in the Province. A number of potentially suitable vaccines are being tested and evaluated.

The six members of the Committee represent the Ontario Ministry of Health, the federal Department of Agriculture and three universities — Queen's, Toronto (two representatives) and Waterloo.



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